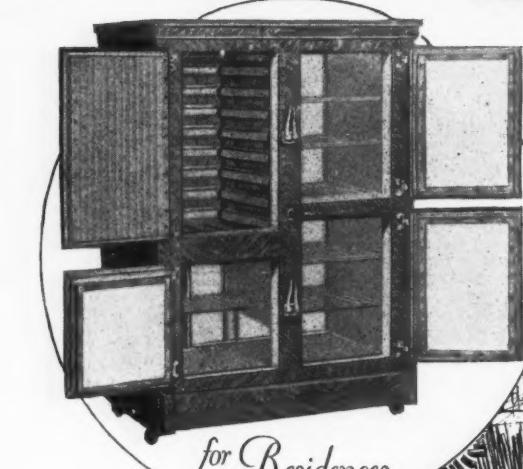


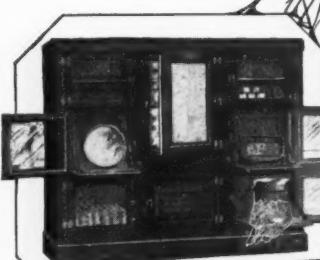


# McCRAY

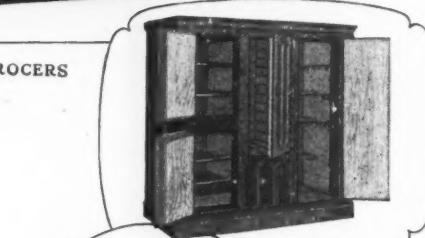
REFRIGERATORS  
for ALL PURPOSES



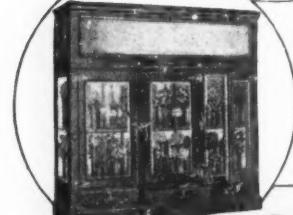
for Residences



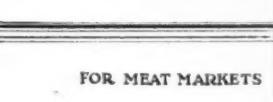
FOR GROCERS



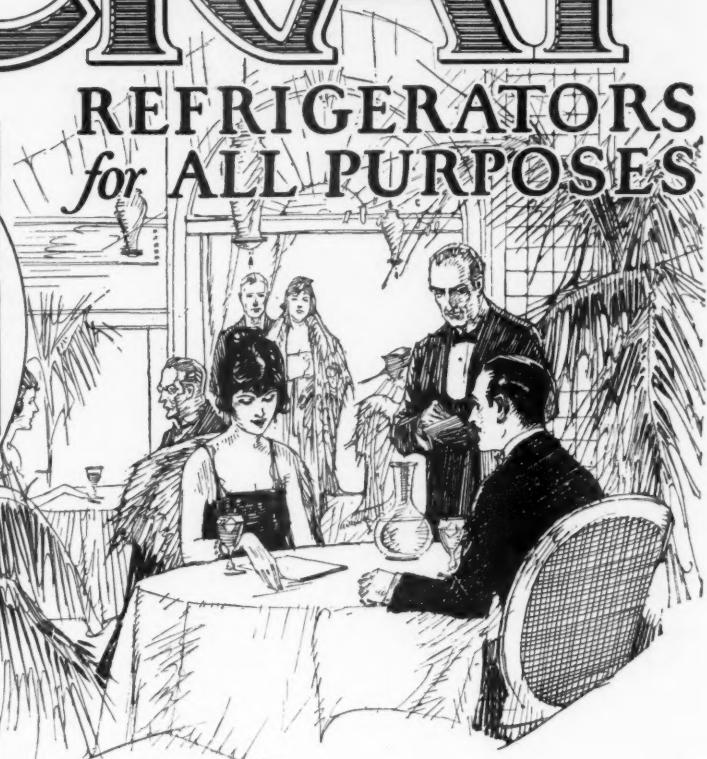
FOR HOTELS, CLUBS  
RESTAURANTS, HOSPITALS,  
INSTITUTIONS, ETC.



FOR FLORISTS



FOR MEAT MARKETS



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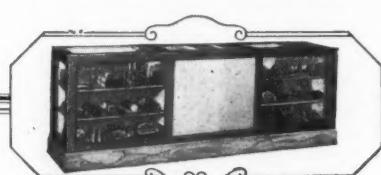
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FOR DELICATESSEN STORES

# Short Talks by the Editor



## Beautiful Art Insert in this Number

*"Home, the spot of earth supremely blest,  
A dearer, sweeter spot than all the rest."*

**S**TARTING in this number of the AMERICAN BUILDER is the first of a remarkable series of Art Inserts in colors, depicting a Street of Beautiful Homes. Each number will contain a picture in colors of some popular type of dwelling with a complete exposition as to how it should be planned, built and finished. Each of these Art Inserts illustrates in colors a home on the "Street of Beautiful Homes." They will be continued until the street is completed. Mr. Radford has been granted a United States patent on this unique panorama idea.

At tremendous expense the AMERICAN BUILDER has had these pictures prepared for the service of its readers. It is another notable achievement added to a long list, and emphasizes our desire to give our readers the most complete, most attractive, and most practical building sales helps that can be obtained. Watch for this wonderful Art Insert each month and use it to interest your home-building prospects in starting work NOW.



## Plenty of Workshops, Too Few Homes

**A**MERICAN cities are being built out of balance. This is the interesting conclusion discovered in a survey of housing recently conducted by the Chamber of Commerce of the United States under the direction of John Ihlder.

In twenty-three cities in which M. R. Ihlder conducted this survey there was a combined population of 7,921,690, each city containing 100,000 or more. In these cities the total number of dwelling permits reached the peak of 31,333 in 1916. Then construction fell rapidly to 10,788 permits in 1918, due to war restriction, rose to 26,041 in 1919 and fell again to 14,291 in 1920.

An interesting feature was the stability of small houses as compared with multi-family dwellings; apartment and tenement houses. While the small houses in 1919 numbered 25,029, within a thousand

of the number in 1914 and less than 4,000 below the peak in 1916, multi-family dwellings dropped from 2,040 in 1916 to 2,000 in 1914 to 483 in 1918 and rose again only to 1,012 in 1919. In 1920 of the total number of dwelling permits 13,847 were for small houses and only 444 for multi-family dwellings, indicating that small houses seem to offer a more secure investment.

But what of industrial buildings during that period? There was a decided steadiness in this class of construction. Permits for business and industrial buildings increased from 1,882 in 1914 to 2,206 in 1916, suffered only a comparatively slight check in 1917 and 1918 and the latter year reaching the bottom at 1,306, then quickly rebounding in 1919 to 2,286 higher than 1916 record and in 1920, in striking contrast to the slump in residential building, actually setting a new record of 2,414.

In short, workshops are being provided in plenty, but no houses for workers to live in. "Such a program," says Mr. Ihlder, "cannot be long continued without the workshops themselves feeling the ill effects."

Without homes the country cannot remain healthy and we only enjoy prosperity when business conditions are healthy. To keep business healthy it is vital that the tissues and blood of these great systems, the workers, should be suitably housed. A comfortable home is one of the most effective incentives to efficient workmanship that can be found. With an abundance of workshops available, it would be wise to strike a balance by building more homes.



## The Success Family

**T**HE father of Success is Work. The mother of Success is Ambition. The oldest son is Common Sense. Some of the other boys are: Perseverance, Honesty, Thoroness, Foresight, Enthusiasm, Cooperation.

The oldest daughter is Character.

Some of the sisters are: Cheerfulness, Loyalty, Courtesy, Care, Economy, Sincerity, Harmony.

The baby is Opportunity.

Get acquainted with the "old man" and you will be able to get along pretty well with all the rest of the family.—London Opinion.

# NO VACANT LOTS IN THE "STREET OF BEAUTIFUL HOMES"

## Do Not Miss One of the American Builder Art Insert Homes

**Tell Your Friends of the Building Industry  
About this Feature, Show Them the  
"Street of Beautiful Homes".  
A Few Additional Orders Can  
be Filled for Those  
who Act Promptly**

What do you think of the Art Insert?

Wouldn't you love to have such a house yourself?

Wouldn't some one of your best prospects this spring admire this design?

This month it is a beautiful Colonial dwelling, two stories, gable roof. Next month the Art Insert is a beautiful western bungalow of five rooms—a perfect gem. The Art Insert for May is a stucco residence of modern design.

Each month will bring its Art Insert home in colors, each one different—each one appealing to a different taste—a style, a size, a cost to suit every home building prospect.

Preserve these designs carefully; use them aggressively [to] help you in your biggest task—the selling of homes and the home building idea to the good folks of your community.

These Art Insert homes are prepared with great skill in both the art work and the reproduction so that when laid side by side they couple up to make a Street of Beautiful Homes.

You want YOUR street to be complete—no vacant lots anywhere. Do not miss a single one of these Art Inserts. Your subscription may be running out this month—Do not take a chance, but *renew* now.

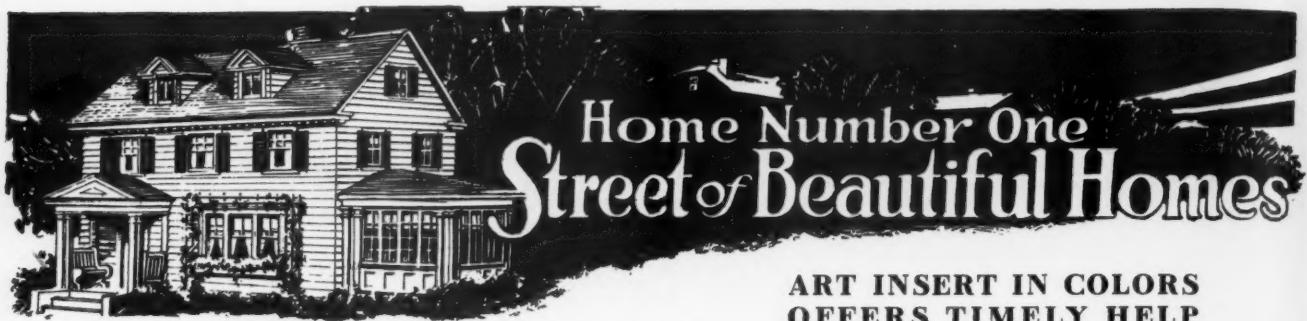
Perhaps you know a few other good builders who are not taking the American Builder regularly who you know would like this Street of Beautiful Homes. If their subscriptions can come in promptly, we can start them off with Home Number One.

William A. Radford, President

**AMERICAN BUILDER**  
1827 Prairie Ave., Chicago



Concerted Action on the Part of the "Big Three" in the Building Industry Will Cause High Rents to Take an Awful Drop.



**C**LOSE to the heart of every man, woman and child is Home. Even the lowly forms of animals, birds and insects build a shelter, the bird builds the nest, the tiny ant builds the hill, the squirrel has his cache. It is one of the most universal instincts of all living things. And is fundamental to the success and continuance of civilization.

Today this bulwark is actually threatened—because of a cessation in buildings the shortage in houses has become so acute as to affect thousands of families. To them the idea is appalling and they are groping about like blind looking for some ray of hope, some inspiration, that will point the way to light and security. The AMERICAN BUILDER has consistently advocated that people should own homes of their own; for years it has presented attractive designs and plans of beautiful homes and has explained the best, most efficient methods of construction. It has been a guiding spirit in home-building. Now that the crisis is at the door, will it fail? Not for a minute!

In fact, that is excellent reason why it should put forth greater efforts than ever before. And the great work starts with this issue. Starting this month the AMERICAN BUILDER offers in each issue a special Art Insert showing a beautiful home with full directions how to plan, build, equip and furnish it. Each month from now on this Art Insert will be the feature, each month a new house will be shown, the houses of the latest and most charming designs constructed in the most practical fashion. They should prove to be beacon lights of inspiration to our readers who are seeking new ideas in home-building. The services of experts have been

used to prepare their inserts and details. The information is as complete as is possible and every phase and detail of the home shown is covered.

Today the all-absorbing topic of conversation is rents. Tenants are in a quandary, they do not know where they will live or how they can live. Inevitably the trend of thought turns to homes, buildings. What can I build—how, where, when? They are in need of professional advice that you can give. They are in need of inspiration, encouragement—what they need is the push that carries them over the goal-line to determination. With this Art Insert on your desk you have the something upon which they can focus their imagination. The housewife, the children, the husband—watch their eyes flash with joy and happiness when they see the home that they have always longed for. Heretofore it has been a mind picture. The AMERICAN BUILDER has transformed it into a real tangible picture. It has brought the dream from the realm of the fairies to the everyday world of facts and action.

Your banker will be interested in this beautiful insert, because he is interested in stimulating the saving idea. The more saving, the more stable the community, the greater the prosperity. He is interested in homes because he knows owners of homes are responsible citizens, reliable people. The lumber dealer,

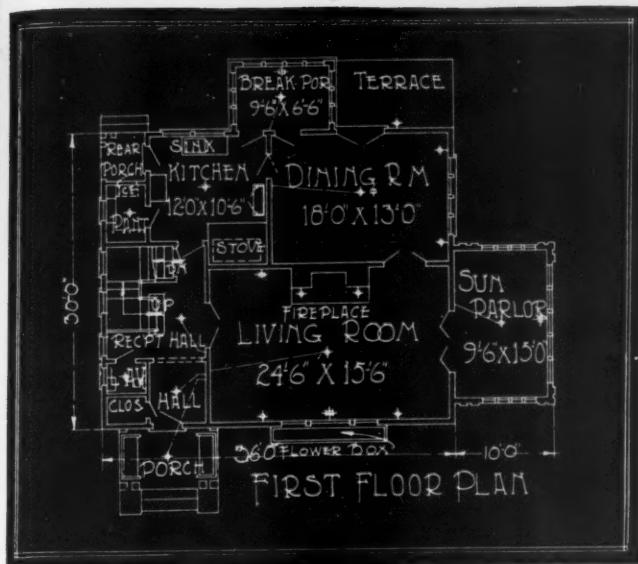
the hardware and furniture merchants, the grocer, the butcher boy, the janitor, even the homeless panhandler who defies death as he seeks a night's lodging in a freight car, will all echo the same sentiment, feel the same uncontrollable appeal of "a home like that."

The desire for a home is alive in every human heart. What is often needed and



**Showing Her Friends Her New Home. One of the Most Joyful Moments in a Housewife's Existence. The Beautiful Colonial Home in the Special Art Insert Will Prove an Inspiration to Many Families Who Are Now Paying Rent.**

## The March Art Insert Home



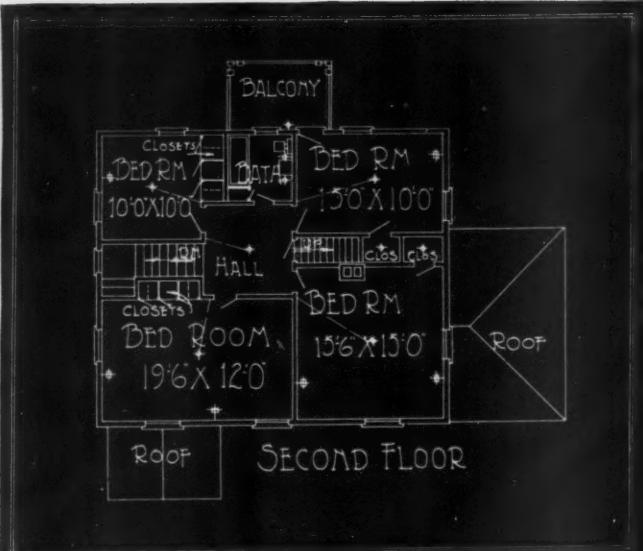
First Floor Arrangement of Home No. 1 on Street of Beautiful Homes. Note the Placing of Electrical Fixtures.

especially in these times, is the force to make this desire so urgent as to demand satisfaction.

This is the First Home on a Street of Beautiful Homes. Preserve this Insert; do not destroy it. Next month comes the second and then the third; keep them all and after the series is finished, you can lay them out and have a wonderfully interesting panorama. These Art Insert homes will be unfolded before your eyes like a great panorama of wonders, each one different, each one containing new ideas in home-building, designed for every need, every condition and every place.

You know the more we write about this beautiful series of home pictures the more enthusiastic we get because we have seen them. And as they are unfolded to your view the reaction will be just as enthusiastic for you could not be human and resist the strongest appeal of all the world. When you see these beautiful designs, won't you write us what you think about this plan? Let us know how it has reacted upon you, your family, your clients, the business men in your locality. We want to know if you feel the same way as we did when we first saw the pictures.

Mere words are superfluous in describing the picture which is wonderfully portrayed in the Art Insert in this number of the AMERICAN BUILDER. Nevertheless, there are some important features which will bear special emphasis, and certain architectural details which should be explained in detail.



Second Floor Plan, Showing Sleeping Rooms and Bath. There Are Seven Rooms in This Attractive Home.

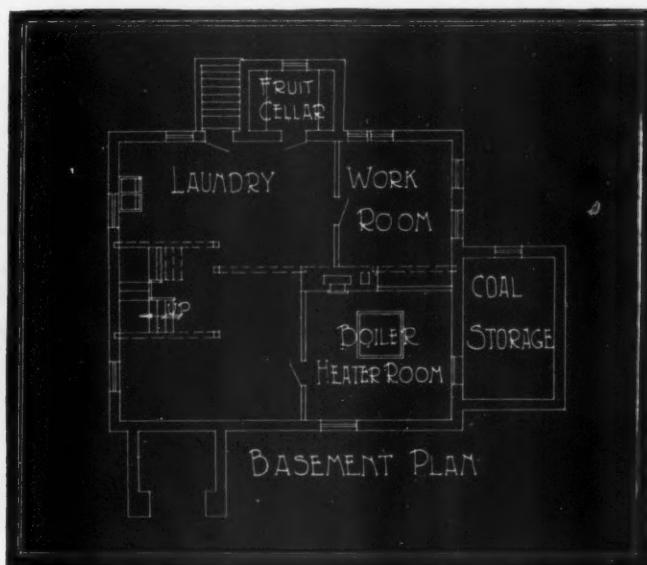
Number 1 on this street of home fairyland is a delightful seven-room, frame, Colonial house, the historic design being very effectively improved by the addition of the modern sun parlor at one end. There is the customary hospitable front entrance, in this case covered by a substantial little roof, and fitted with inviting benches of wood. The green shutters and Colonial windows are there as is the lattice work with its climbing vines and window flower boxes adding to the picturesqueness of the scene.

The front door opens into a hall with convenient clothes closet. This hall leads into a reception and stair hall which gives access to the living room on one side, hall lavatory, and the kitchen at farther end. The living room is the delight of the house, a great roomy space with open fireplace and electric light fixtures placed about at advantageous intervals. The kitchen is modern in every respect and contains complete equipment. The dining room and breakfast nook complete the lower floor plan.

On the second floor are the bedrooms and bathroom grouped about a central hall. In the floor plans shown here the placing of electric fixtures, receptacles and outlets are shown.

In the basement provision has been made for a modern laundry, fruit cellar, work room, heater room and cold storage room.

The number and arrangement of electric lighting fixtures, outlet and receptacles for various electrical appliances is also excellently shown.



Efficient Basement Plan, One That Should Prove a Winner with all Clients. The Foundation is Concrete. Size of House, 36 by 30 feet.

in the floor plans of this home. In the sun parlor there is a light located in the central part of the ceiling and a receptacle on the outer wall for table lamps, fan or vacuum sweeper. In the living room, in which lighting determines to a great extent the restfulness and charm of the room, the electrical equipment is very complete. The large central fixture is supplemented by small fireplace lights and outer wall lights, and wall outlets for various appliances. The other rooms are provided for in similar manner. In the laundry several outlets should be installed for the electric washing machine and iron.



**Lighting Facilities in a Home Are Very Important. They Make the Rooms Restful, Attractive, and Cheerful. Study the Floor Plans and the Preceding Page for Electrical Equipment.**

With the actual construction work done, the home is by no means completed. Now comes the arrangement and furnishing of the rooms, the selection of colors of paints, wall paper, draperies, etc. As in the case of music, discords must be avoided. Well-blended harmonious colors have a soothing and restful effect upon occupants and visitors.

One of the important factors in interior arrangement is furniture. Each room must be considered for its peculiar needs. Starting with the sun parlor; for this location it has become generally accepted that woven furniture is the most suitable. The principal effect desired in a sun parlor is cheerfulness and lightness. For this reason designs are of a less massive construction and the finishes of gay and cheerful colors such as white, old ivory, midnight blue, and gray. All of these lighten up and brighten up the room which, as its name signifies, should be a sun-shine parlor. The family should feel the worries and



**Cozy Breakfast Room Group of Wicker Furniture Used in Place of Permanent Fixtures.**

burdens of the working day lifted from their shoulders as soon as they enter this delightful retreat.

Coming along with the sun parlor in the designing of the modern home is the breakfast room, a cozy, intimate little nook near the kitchen where the family can eat the lighter meals in unconventional and comfortable fashion, so that the housewife will not be put to the extra work of serving an elaborate meal in the dining room. This room should be cheerful and cozy and inspirational. Here the business man takes a hasty breakfast bite before rushing off to the grind of the day.

In the selection of furniture for the living room, the owner's individual tastes are generally the determining factor. Most popular today in homes are a few pieces of extremely comfortable tapestry or velour, the latter made up in many colors. In many homes, woven furniture is used in this room, that is, the frames are of this material with tapestry and velours for the upholstering. Of the colors which are very attractive and restful, frosted brown and fumed and American walnut are largely used. This furniture is obtainable at very reasonable prices.

Regardless, however, of the kind or type of furniture used, the important thing to keep in mind is the harmony of the whole scheme. In the painting and interior decorating (as fully and very clearly explained in an article elsewhere in this number) wide variety is available.



**Furnishing the Sun Parlor Is a Task of Skill. Some Important Points on Interior Furnishing Are Explained in This Article. Light Weight Woven Furniture Adds to the Cheerfulness and Brightness of the Room.**

# Newly Awakened Interest in Community Building

SEVERAL IMPORTANT SUGGESTIONS FOR WIDE-AWAKE BUILDERS—HOW TO GET BUSINESS  
By Lester G. Herbert

WIDE-AWAKE builders and contractors, like other business men, must always be on the alert to discover new trends of business, and to adapt their own methods and campaign plans to suit the times.

The war brought groups of people together who previously had been totally unacquainted. Those who went overseas were closely associated regardless of social or financial standing, and those who remained behind were organized into Home Defense Committees, Red Cross Units, Patriotic Clubs, etc.

When the war was over, the same co-operative spirit was shown in organizations for raising funds for soldiers' monuments, memorial park associations, memorial bridges and arches, and driveways, memorial libraries, and all that sort of thing.

This same spirit of working together shoulder to shoulder has manifested itself in many reorganized chambers of commerce, merchants' associations, citizens' leagues, and big club movements.

The other evening the writer attended a forum conference of a chamber of commerce in a city with a population of 35,000. This chamber of commerce has a membership of between twelve and fourteen hundred members with an annual dues of \$25.00 per member.

It was extremely interesting to note that at least 10 per cent of the suggestions had to do with *community building*, and it was then for the first time borne in upon the writer, the pride and the civic interest being taken at the present time in municipal, educational, and industrial buildings. These, and good roads, paved streets, and adequate lighting seemed to lead.

This is a straw in the wind which should not be overlooked by building interests, for there is a great deal to be considered both in the present and the future. At the meeting mentioned, the great need of the new city administration building was expressed, and the old city hall which had long done duty was brought under fire. It was then pointed out by a prominent, practical contractor who was present that the present city hall was off on one side, and that the modern idea of city building called for the arrangement of public properties on an avenue, a square, or in a symmetrically arranged group.

Already in this town public library, postoffice, and court house were suitably placed, and it seemed advisable to consider a more fitting location for a new city hall than the old one.

In less time than it takes to tell it, there was awak-

ened a keen and intelligent interest in a large, modern, and adequate building placed in a suitable location which should serve the present and the future of this city for generations to come.

The next subject proposed was an industrial building. It was pointed out that this city was becoming a favored one for convention gatherings. And that most desirable publicity could be gained, and more industries attracted by a worthy industrial building where the one hundred or more manufacturing enterprises of the city could maintain permanent exhibits under co-operative management, and at a minimum of expense.

The next topic was the outcome of the last, and had to do with the great need of better hotel facilities. It was pointed out that several large gatherings had been lost because the delegates could not be taken care of in a proper manner, and it was also noted that automobileists and traveling men were passing thru because of poor housing conditions. Several plans were pro-

posed for establishing a corporation of city business men to put up a large hotel worthy in every way.

The very next subject introduced had to do with the building of comfort stations thruout the city. This particular commu-

nity is noted for its beauty, and the fine condition of homes and streets; but when it was laid out years ago, the need of comfort stations was not recognized, and with the growth of the city these have become imperative.

Here again the contractor was asked several questions as to the probable expense, and the number which should be provided in proportion to the population. Also the most approved type of such stations.

When you stop to think that these were only the suggestions of a small fraction of the membership committee of this entire chamber of commerce, it is singularly illuminating, and points how much actual *community building* might be done in the average town or city—and done to good purpose if only someone would set the ball rolling.

What is everyone's business is apt to be no one's business, and so the organization of a live civic body, and the appointment of a building committee are steps in the right direction. If the right personnel is named on the building committee and the newspapers are lined up, it is relatively easy to create public sentiment in relation to these matters, and in a short time building enterprises can be on the way which will be a benefit to everyone concerned.

**"WHERE is the man whose soul is so dead" that he cannot appreciate the beauties and comforts of a real home? Let him look at the art insert in this month's American Builder! He'll want to buy that home at once and so will a whole lot of other people. In time of war we fight for the homes we build in time of peace. The war is over—so let's build.**



# Our Front Cover HOME DESIGN

## Charming Seven-Room Family Home

IDEAL DWELLING OF HOLLOW TILE WITH BRICK VENEER AND  
HALF TIMBER—POPULAR DESIGN FOR SMALL FAMILY

**W**HEN Noah built the ark he had a real housing problem on his hands. There were all sorts of animals, fowls, insects, etc., each with different instincts and customs of life to be taken care of and satisfied. And yet he managed to make it comfortable for all. Which all is an eloquent testimonial to Noah's ability as a builder.

Yet, today when we are confronted with a housing problem, far from being so complex, for there are only human beings to be housed, many contractors and builders are prone to throw up the sponge. The difference between them and Noah is that Noah studied his proposition—they have still to learn. Building today is the result of a careful study of the wants of people. Most people want a home of their own and they want certain things in them after they are built. That is where the builder takes an important part.

There is the man with small family, the man with a large family, the man with no family at all—each has different ideas on what a home should be, how it should look and be arranged. There is the home woman whose interests are wrapped up in her children, the club woman who has many outside activities; both of these have very definite ideas. But they all agree on one thing—that their home shall be as comfortable and as convenient as possible because of the amount of work depending on it.

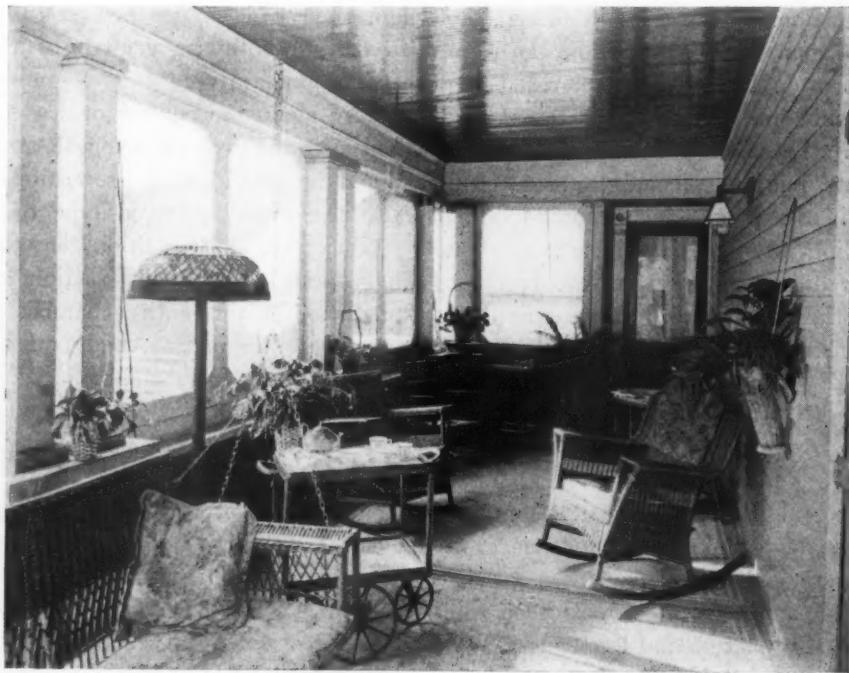
That is one

reason, and a very big reason, why the modern builder has to be a student of psychology as well as a builder of houses. He must be able to mold his plans according to the desires of his clients regardless of their inclinations. To help him out in this problem the AMERICAN BUILDER presents a variety of designs and house plans each month. Noah had no such service when he built the ark, yet he succeeded in making a good job. Surely the builder of today cannot offer any excuses to his client.

Exterior charm and interior comfort—these two qualities may well be considered the crux of the home-building problem. And in the front cover home of this number the architect has incorporated both ideas with very attractive and pleasing results.

The home shown on the front cover of this number is a charming story-and-half structure of modified English lines, very substantially built and efficiently arranged. The walls are hollow tile, finished on the lower floor with a brick veneer and above the eaves line

with a charming stucco, arranged in half timber effect. This type of construction insures an even temperature in winter and summer, as the tile provides an insulating barrier thru its air spaces against extremes of heat or cold. The brick veneer adds an elegant and permanent exterior. The variations in roof elevation break up the monotony that is so often found



What Is Home Without a Sun Parlor? That Is What Most People Believe Today and the Builder Will Strike a Responsive Chord in the Heart of His Prospect if He Emphasizes This Feature in the New Home.

## Our Front Cover Home

89

in home designs and lends a distinctive flavor to the appearance of the design.

Considerable skill has been exercised in the arrangement and design of the front entrance which takes the form of a projection with gable roof. An artistic stone arch above the door greatly enhances the detail of the entrance. This opens into a small reception hall which leads to the stairway to the upper story and also to the dining room on the left immediately in back of the sun parlor. This sun parlor is a very attractive feature with its tall French doors on two sides. To the right of the reception hall is the living room, 13 feet 6 inches by 16 feet 6 inches, lighted by a triple casement window in front and two smaller windows on the side flanking the open fireplace. From the living room is a door opening into a small hall which leads to the bedroom on the right, a small lavatory, and the kitchen on the left.

The latter room is 9 by 12 feet 6 inches. Entrance to the dining room from the kitchen is gained by a passage way thru the adjacent breakfast room equipped with permanent furniture. A small pantry is also located next to the kitchen. On the sun parlor side the house is 32 feet long, on the other side 28 feet. It has 39 feet frontage.

The upper floor arrangement is very cozy, containing three bedrooms, two being 11 feet 6 inches by 15 feet and 14 by 15 feet, while the third is smaller, 9 feet 6 inches by 11 feet, very suitable for a child's room. All three bedrooms have exceptionally large closets for clothing.

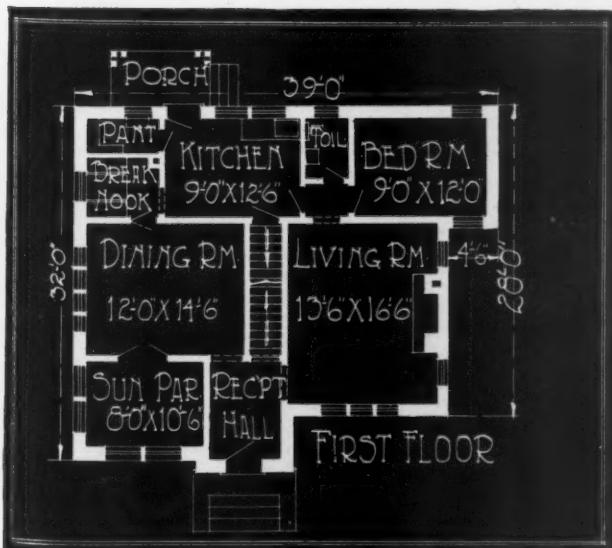
Important to all housewives is the mechanical labor-



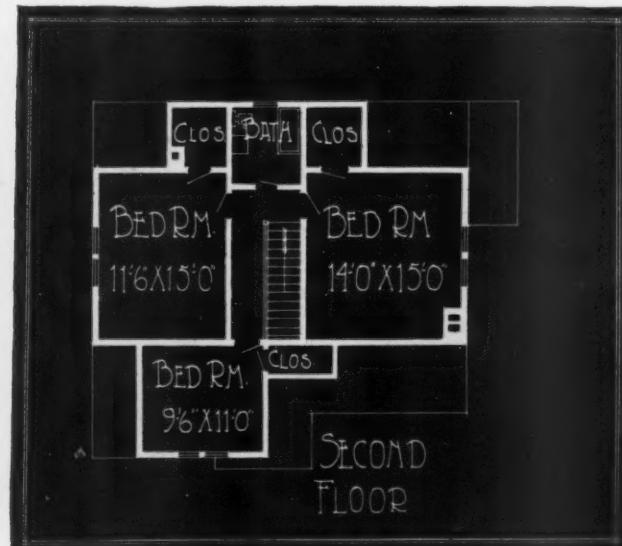
*"Way Back When" They Used to Sew Themselves in a Sack There Were No Such Things as Laundries, But Science Has Disproved the Old Theory That Cleanliness Is a Vice. That Is Why Housewives Are in Favor of Labor-Saving Laundries and Machinery.*

saving equipment that is built in the home. In this attractive dwelling there is a large laundry fitted with sanitary tubs, a washing machine, ironing board with receptacle close by for electric iron, and electric mangle or ironing machine. Provision can be easily made for an end icing box and package receiver to eliminate the unnecessary tracking up of the kitchen floor by various delivery men.

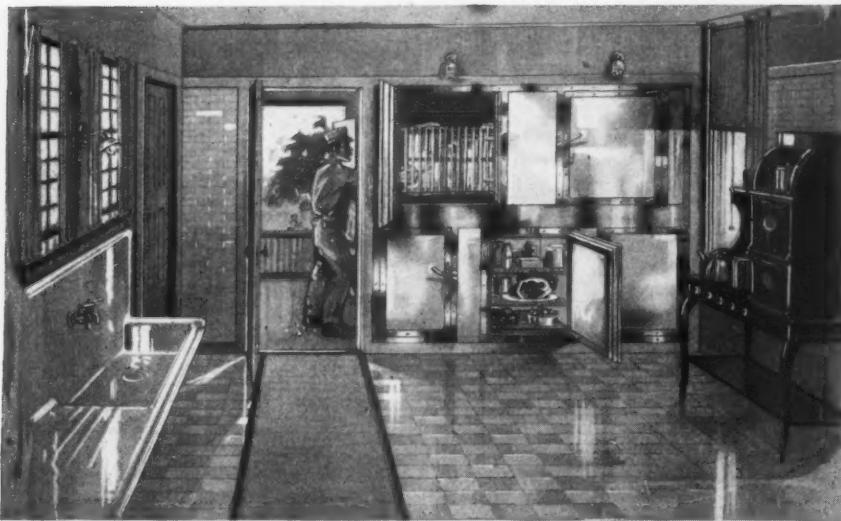
If more buildings of this type and charm were shown to prospective home-builders by contractors and builders, there would be a very noticeable response. Many people are deterred from building because they cannot find the design that they want. Especially is this the case of the man with a small family who wants to install his wife and children in a pretty home with plenty of room and who cannot afford to pay a very



First Floor Plan of Front Cover Home. This Charming Hollow Tile House with Brick and Stucco Finish Contains Seven Pleasant Rooms.



Upper Story of Front Cover Home, Showing Bedrooms and Bath. Note the Ample Closet Room. This House Is 32 by 39 Feet.



**Did You Suggest an End-Icing Refrigerator to the Wife of Your Client? She Will Appreciate It Because She Has Her Kitchen Tracked Up Every Time the Iceman Brings a New Supply. Put the Ice in from the Porch.**

large amount of money to build it. Above all he wants a home that will be permanent and lasting and a protection against danger such as fire.

In his case it would be difficult to find a more suitable design than the one shown on the front cover. This year with rents mounting skyward there will be more and more people planning on new homes of their own.



### More Cement Needed to Rat-Proof Buildings

THOSE who are interested in the sale of cement should appreciate the value in this connection of the nation-wide anti-rat campaign now being waged by the United States Health Department and State and City Governments.

Rats constitute a tremendous menace that costs the nation \$180,000,000 to maintain annually and it takes the work of 200,000 men to produce what they consume and destroy. This would mean a lot if it could be turned into some useful channel and would represent an enormous saving if cut out altogether.

Here are some of the ways in which cement is used to fight the pest:

No. 1. Pounded glass mixed with cement is used to stop rat holes, cracks, and crevices.

No. 2. Old planked areas, passage ways, courts and yards should be cleaned out by having the planking removed, the surface prepared and a handsome clean surface of concrete laid down.

No. 3. Old abandoned sewer pipes, drains and wells should be closed in with cement plugs, thus sealing them up so that they can-

not harbor the rodents.

No. 4. Buildings with dead spaces in the walls should be rat-proofed by having cement heads or stops set at top and bottom so as to make the space vermin free.

No. 5. Foundations for new buildings of stone, cement, or brick, should be set 2 feet at least below the surface of the ground and the angle smoothly cemented in with the marginal walls so as to leave no crevices of entrance.

No. 6. Concrete buildings which do not permit of being gnawed by rats should be erected in place of loosely constructed buildings of vegetable material such as wood which will be gnawed by rats.



### House Without Lath

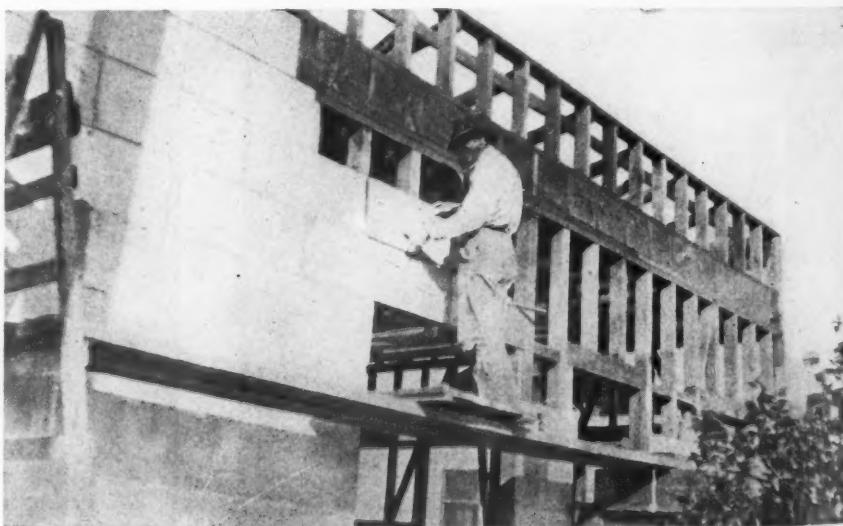
MR. A. HALLER, of San Pedro, California, is erecting a new store building, which is unusual because of the fact that concrete slabs instead of laths for the plastering is used. Mr. Haller, who is 63 years old, invented this method himself, and has made all the slabs for the structure.

The cement and sand is mixed in the usual manner and moulded in frames three feet long and one foot wide. The slab is a little less than an inch thick. A length of chicken wire is laid in the mould for reinforcement. Before the mixture is set, holes for nails are made, easily and quickly, by the simple method of a piece of wood with nails driven in at just the right distance.

When the slabs are dry they are nailed on the studding, reaching across three. On the studding where the two slabs meet, washers secure the two edges. These slabs are placed inside and outside of the walls, and the plastering is applied over them.

Mr. Haller believes that this method is less expensive than laths and that the slabs can be made and applied more quickly. A little sand is dusted in the moulds before the wet mixture is put in so the slab will come out more easily.

DELPHIA PHILLIPS.



**Mr. Haller, California Contractor, Is Using Concrete Plastering Slabs Instead of Lath. These Slabs Are Placed Outside and Inside the Walls and Plastering Applied Over Them.**

## Attractive Real Estate Office Design

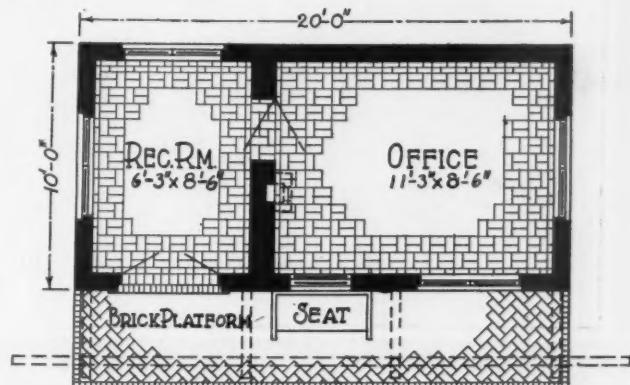
ARTISTIC ARRANGEMENT OF SETTING AND PLEASING EXTERIOR DESIGN HAS STIMULATING AND INSPIRING EFFECT ON ALL PEOPLE INTERESTED IN HOME BUILDING—CONSTRUCTION DETAILS ON PAGE 92

WHEN a firm advertises it hopes to make a certain desire in its prospective customers so strong as to culminate in a purchase. The real estate man starting a new subdivision is interested in selling lots to home-builders. How can he go about to stimulate this desire and thus increase his business? One very effective method is shown in the picture below. This real estate man has built a charming little office with all the earmarks of a cozy little bungalow. Even the most casual passers-by will pause to look it over; lukewarm prospects will be tempted very strongly to stop in and get further particulars about the project.

By building his real estate office this way the dealer appeals to the strongest sentiment in the world—the love of home. To make the building even more effective, it has been constructed of several materials in such a way as to show how each can be used. It has hollow tile walls coated with stucco, brick platform and floor and some excellent millwork features.

The exterior of this building is very attractive, made so by the low gable roof supported under the eaves, by large wooden brackets and lattice work on the sides. A hospitable Colonial bench next to the door beckons the weary homeseeker. Casement windows with brick sills add to the pleasing effect. The reception room is 6 feet 3 inches by 8 feet 6 inches. It is connected with the office by a single door. The office is 11 feet 3 inches by 8 feet 6 inches, well lighted by two double

casement windows and a small window over the seat on the front platform. The building is 20 feet wide and 10 feet long and is generally located at the corner

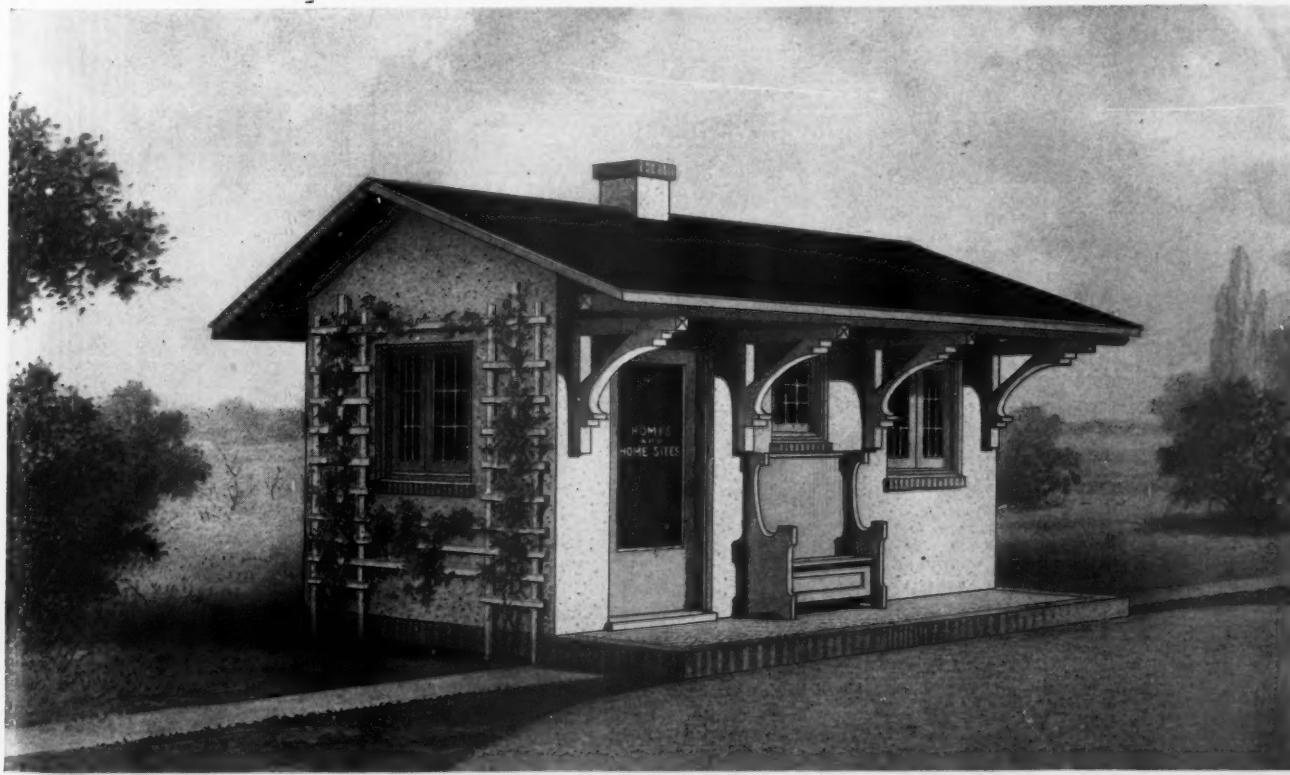


PLAN OF HOLLOW TILE REAL ESTATE OFFICE

Floor Plan of Real Estate Office, Showing Interior Arrangement of Reception Room and Office.

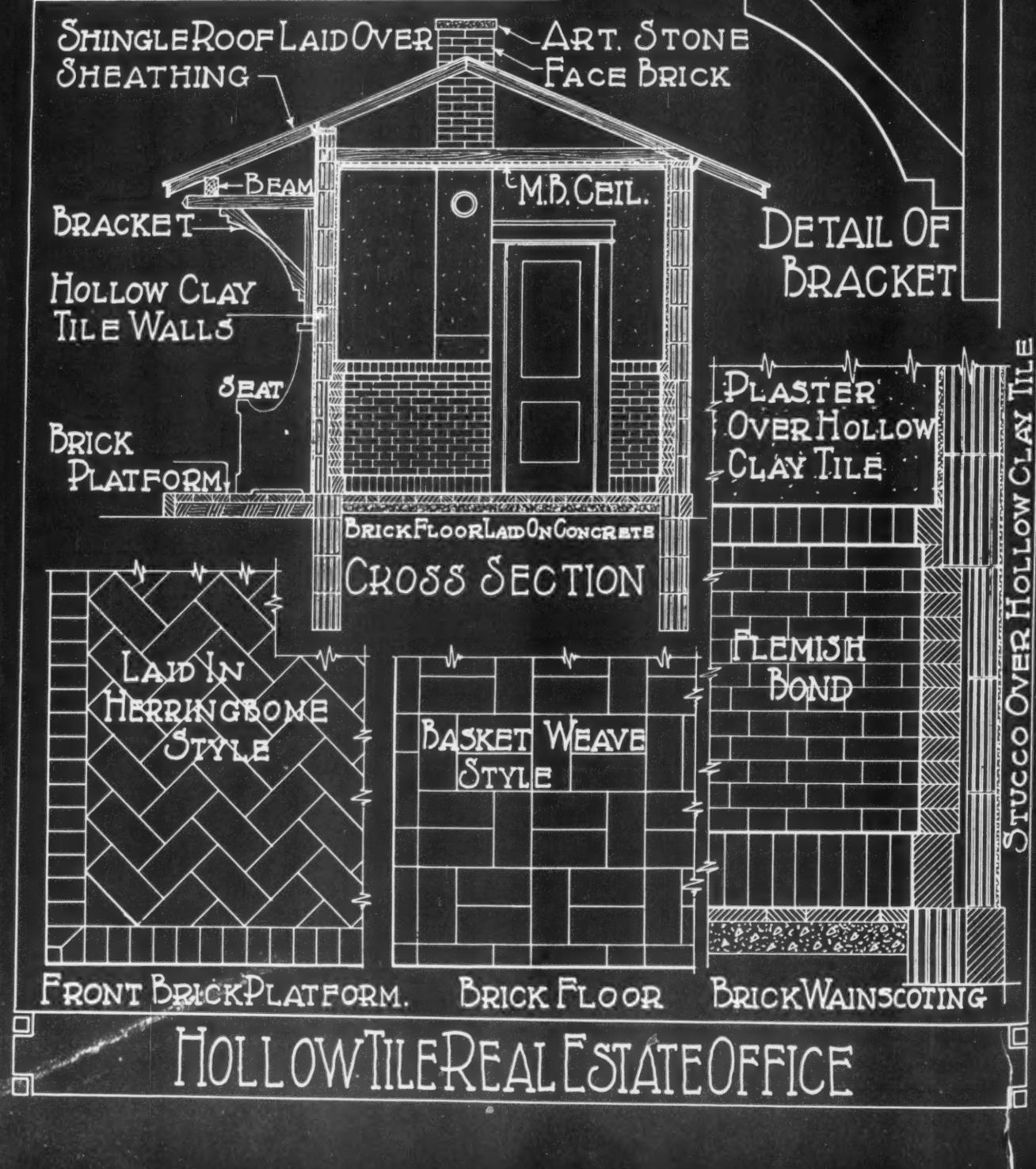
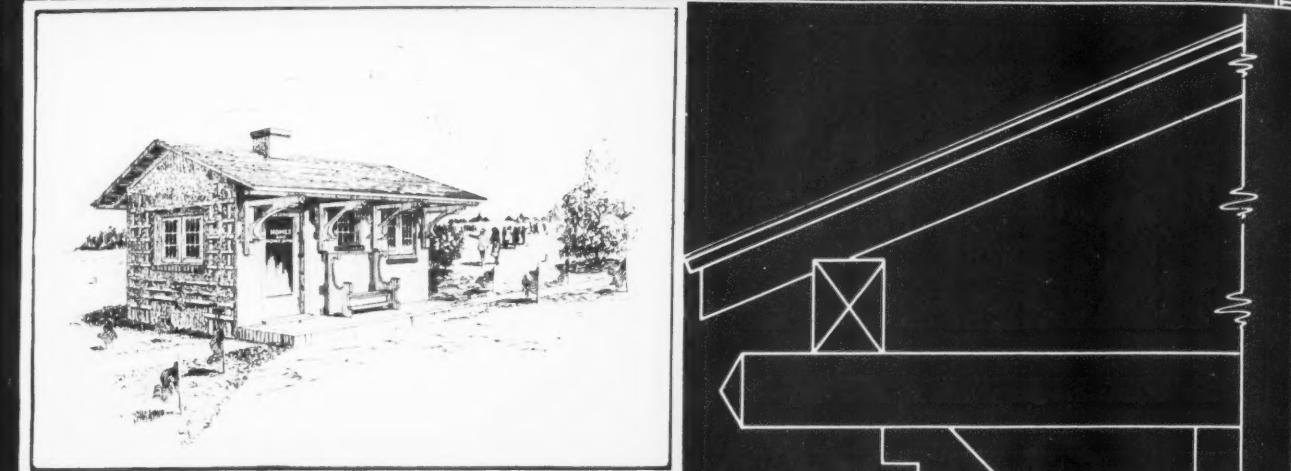
of the subdivision. Construction details are shown on the next page. ♦

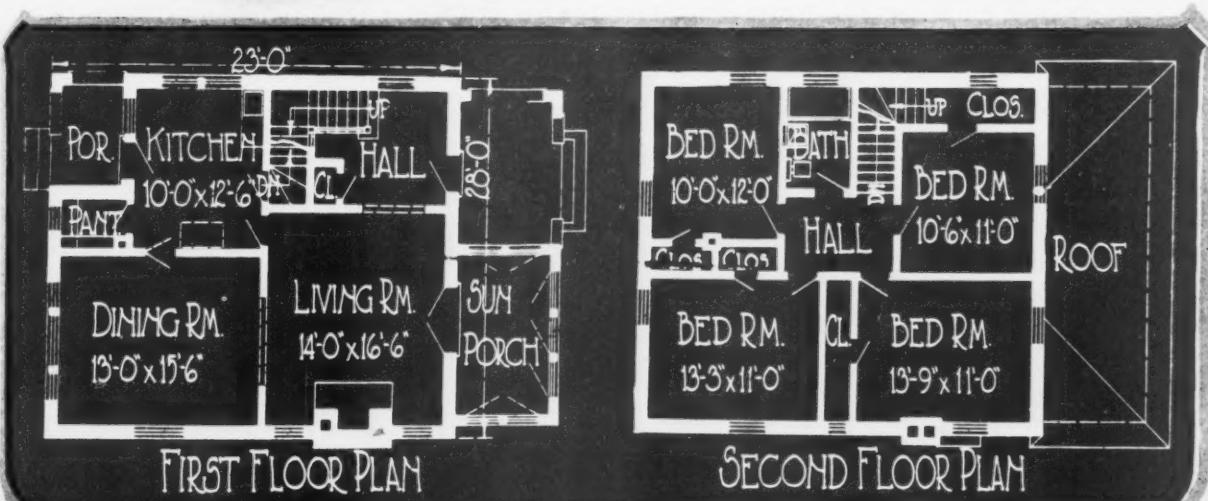
IT has been predicted that the by-product distillates of wood, as wood and grain alcohol, may sometimes equal other sawmill products in value. Grain alcohol may be produced from any wood at relatively low cost and by a process that yields other products of value as well. This may become a substitute for oil and gasoline in the operation of engines for automobiles and automotive machinery.



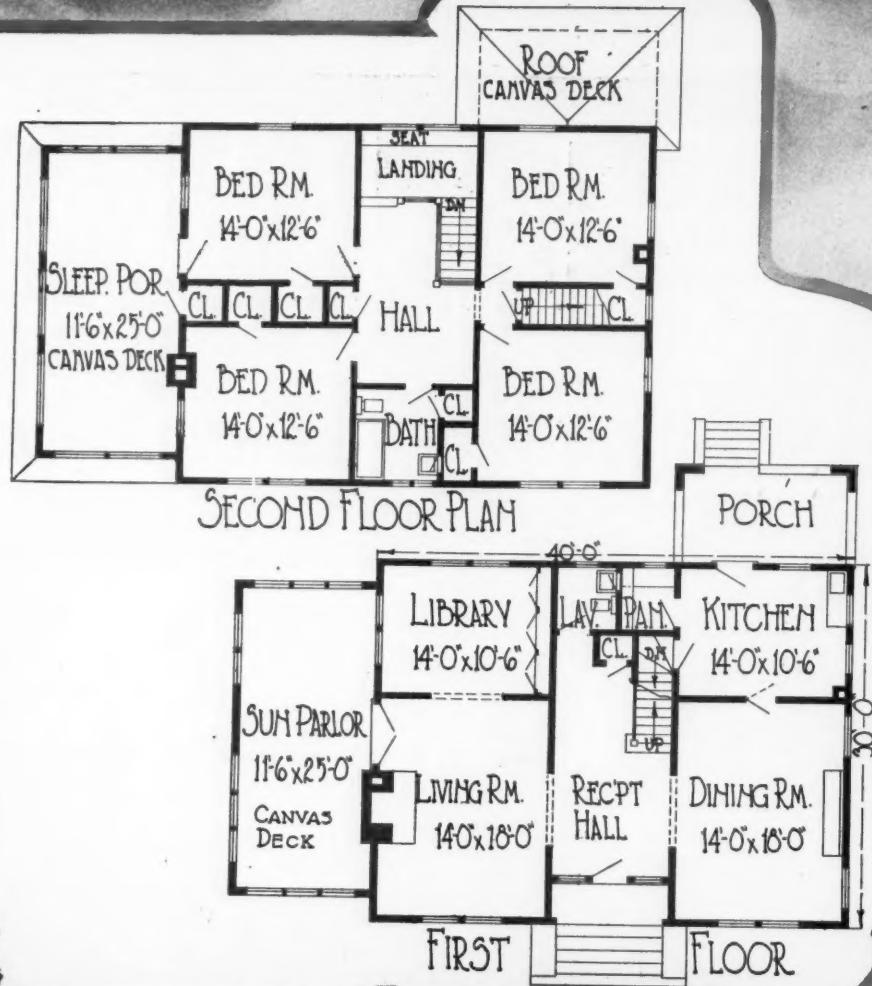
Attractively Constructed Real Estate Offices Like the One Above Will Be a Wonderful Stimulant to Business. This Cozy Little Structure Is Built of Hollow Tile with Stucco Exterior and Brick Floors. It Is 10 by 20 Feet in Size. Don't Overlook Art Insert, Showing Beautiful Colonial Home in This Issue.

# RECOMMENDED CONSTRUCTION





**S**UBSTANTIAL CONCRETE BLOCK HOME OF POPULAR DESIGN. The square-shaped hip-roofed house is always popular, and this attractive spacious home should prove no exception. It is built of smooth-faced concrete block and has a large front porch, part of which is glazed in. The rooms are laid out in the manner common to this type of structure and are all comfortable, well lighted and cheerful. The sun porch is reached from the cozy living room. Dining room and kitchen complete the lower floor plan. Upstairs are four bedrooms of ample size with clothes closets. This home should appeal to the man of family who wants plenty of room and does not care for frills. Because there is no freakish construction required, the square-shaped house is very economical in cost. The size of this seven-room house is 28 by 23 feet.



**B**EAUTIFUL EIGHT-ROOM STUCCO HOUSE. The features of this comfortable and attractive home are the large roomy sun parlor and sleeping porch at one end. The deck between these two porches has been covered on upper and lower sides with canvas, serving as roof for the sun parlor and floor for the upper porch. The house is built along square, economical lines with eight rooms, four on each floor. On the lower floor are the living room, dining room, library and kitchen and an extra lavatory. Upstairs are four bedrooms and bath. In the large living room, 14 by 18 feet, is an open brick fireplace. The library is fitted with wall book cases. All rooms are well lighted by windows on two sides. A drive along the side of the house leads to a stucco garage in the rear. The home is 30 by 40 feet.

## Modern Bank Building Design

SUBSTANTIAL BRICK STRUCTURE HAS ATTRACTIVE FAÇADE WITH TERRA COTTA TRIM AND EFFICIENT FLOOR PLAN ARRANGEMENT—CONSTRUCTION DETAILS ON PAGE 96

**I**N any town the bank is the bulwark of prosperity and security, the repository of confidence. Consequently the architecture of the building in which it is housed is designed to carry out this idea. Bank buildings are stout and substantial in construction, and dignified in appearance.

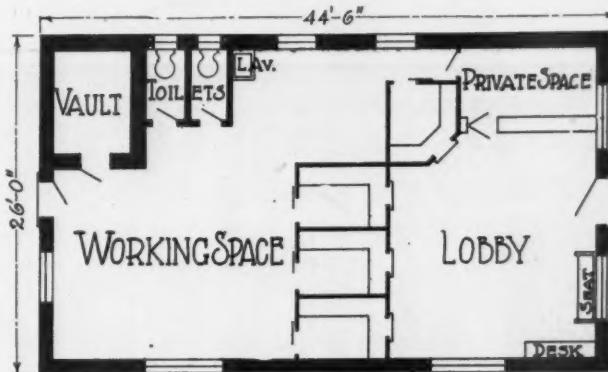
The facade is most important. It should be attractive and indicative of power and strength. The inevitable reaction of people of this kind of building is bound to be favorable.

An excellent type of bank building of smaller size is shown here. It is admirably suited for locations in the uptown sections of larger cities and as the main building in smaller towns. The front facade has been very skillfully designed. On the lower floor is the dignified entrance flanked on either side by high, grated windows. Above three large windows provide plenty of unobstructed light to the lobby. This building is built of brick with terra cotta trim on front and sides. Two large windows on one side and two smaller ones on the other provide additional lighting facilities. The heavy front door opens into the lobby or public space where customers can transact business. Desks and wall counters have been installed for their use. On one side is the office of the officials who have to transact business over the counter and to the rear of the lobby is the banking space with tellers' cages, vault, and two lavatories. The vault is built within solid brick walls.

In a bank of this size the ornamental bronze railings and fixtures are quite important. The interior, while lending an impression of security, should be

made as attractive as possible, and this result is very excellently obtained by the installation of metal fixtures, many types of which are available to be builder. Some details of interior bank construction are shown in blue-printed form on the next page.

Wherever people gather together and form a community, there is need for a banking institution. Starting perhaps in a makeshift office it eventually recognizes the need of a modern and safe building. That is why new bank buildings are being erected continu-



FLOOR PLAN OF BANK BLDG.

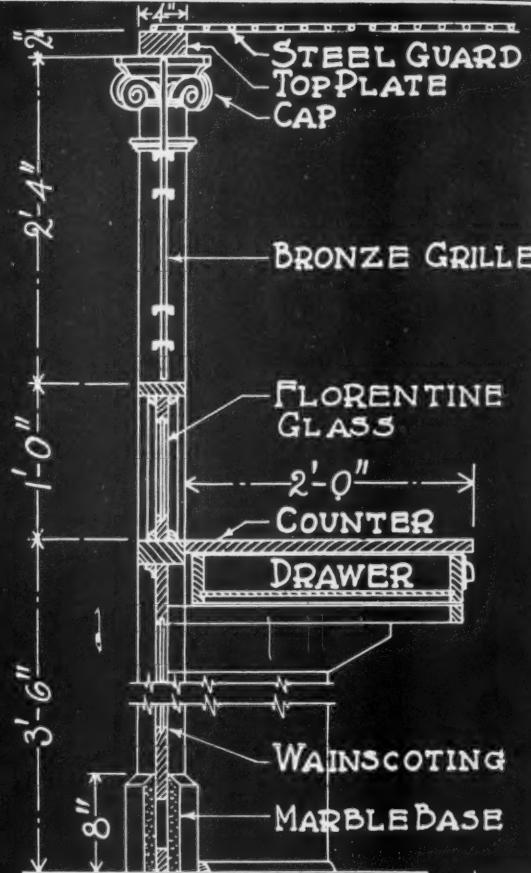
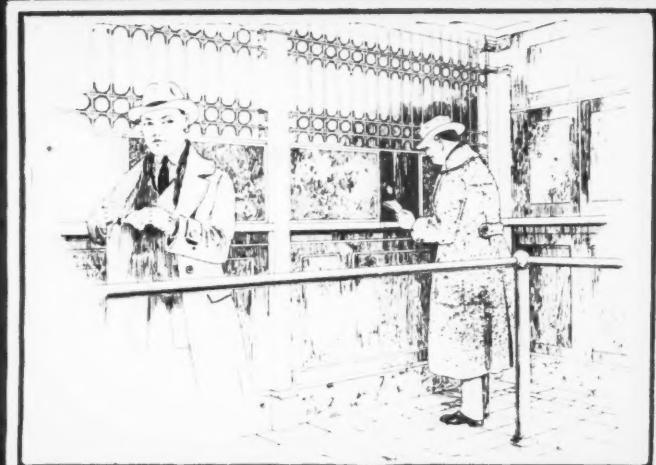
Floor Plan of Modern Bank Building Described in This Article.

ally despite cessation or lull in home-building and other activities. There is opportunity in every town regardless of size or location for the builder to get the contract on this important structure. Once completed it will be the most eloquent advertisement he can have to further his business and better his reputation as a builder of buildings worth while.



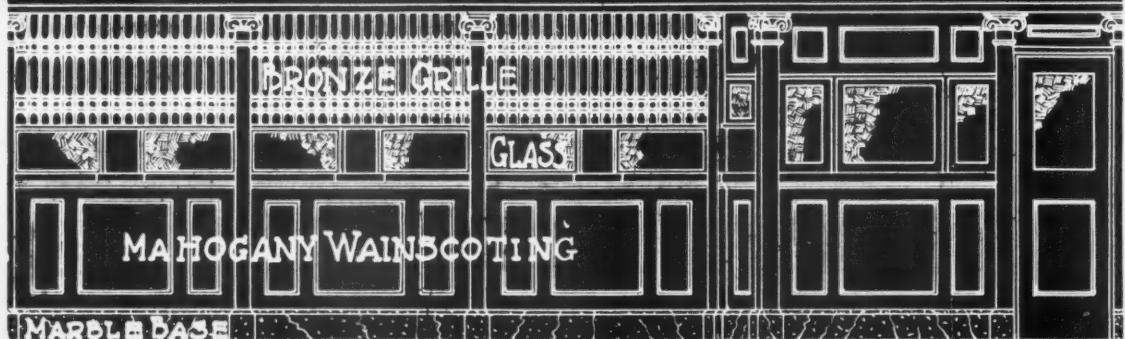
Perspective of Bank Building Design. Built of Brick with Attractive Terra Cotta Trim, It Is an Excellent Type for Outlying Banks in Large Cities and in Towns. (See Construction Details on Next Page.) Size, 26 by 44 Feet 6 Inches.

# RECOMMENDED CONSTRUCTION

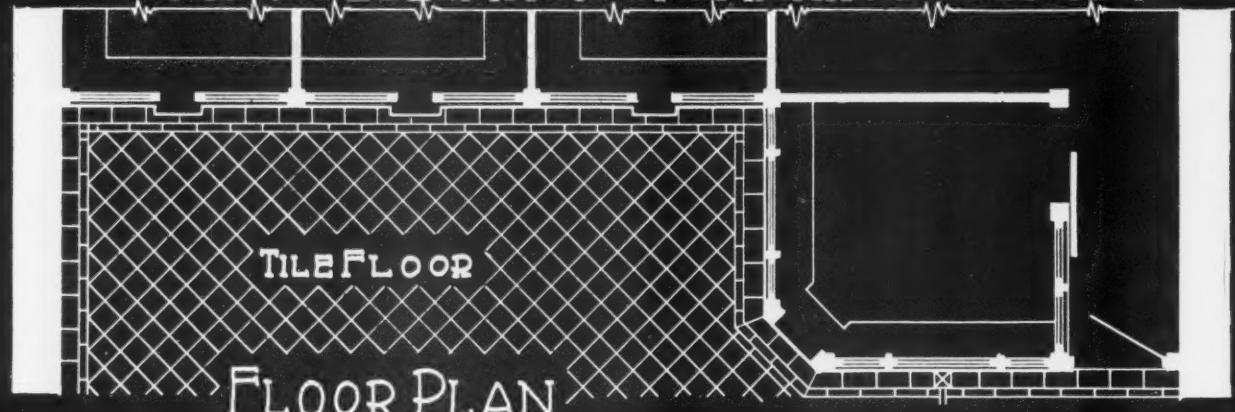


DETAIL OF GRILLE

COUNTER SECTION



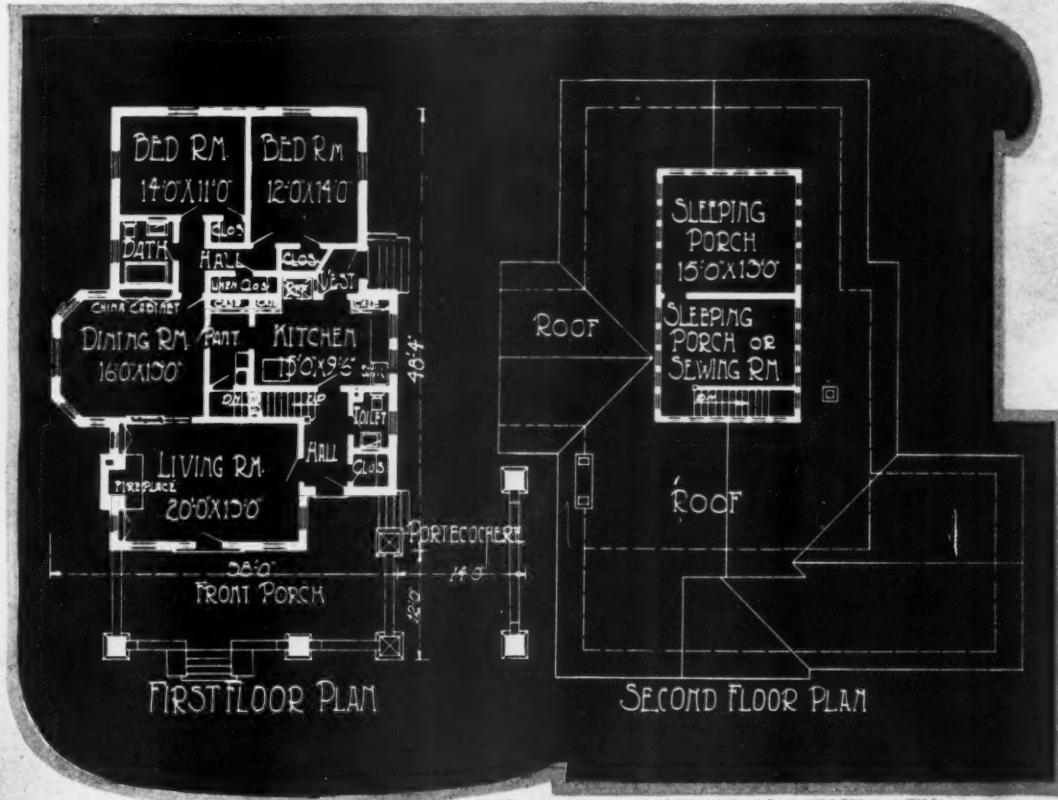
FRONT ELEVATION OF BANKING COUNTERS



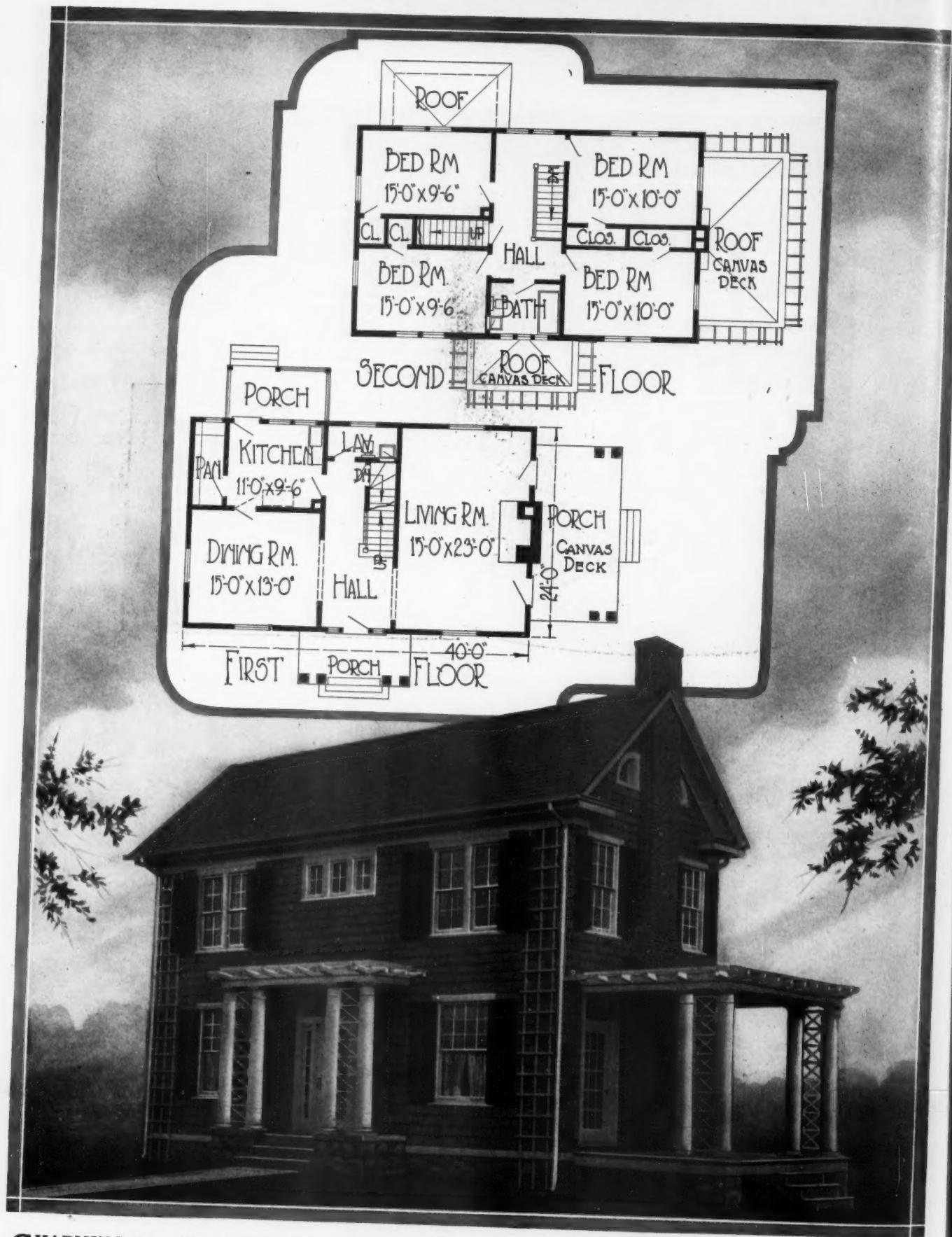
INTERIOR BANK FIXTURES

## Airplane Brick Bungalow of Unique Design

97



**SOMETHING UNUSUAL IN BUNGALOW DESIGN.** For the man of strong individualistic taste, this rather odd "airplane" shaped bungalow should prove very tempting. It is different than most houses, but quite attractive. The body of the house is attractively finished in buff face brick with pronounced mortar joints while the upper part and cupola are finished in stucco in half timber effect. The treatment of the roofs on the house proper, upper story, and portecochere is quite artistic and distinctive. On the main floor are living room, dining room, kitchen and two bedrooms. In the cupola are two additional sleeping rooms or porches, as they are called, one of which may be used very conveniently as a sewing room because of the excellent natural lighting afforded by the many windows. The house itself is 38 by 48 feet 4 inches. The portecochere is 14 feet wide.



**CHARMING COLONIAL DESIGN.** Like "old wine" this type of architecture grows better with age. This Shingle-sided, it has very striking pergola porches with lattice work between the pillars. The front and side porch roof decks are covered with canvas roofing as indicated in the floor plan above. The foundation is built of rough stone. There are seven rooms in this home. The living room is large and comfortable, 15 by 23 feet, with the usual large open brick fireplace. The dining room across the small reception hall is small and convenient to the kitchen which is also designed along compact lines. A lavatory has been provided on the first floor. Upstairs are the four bedrooms of about equal size. Size, 24 by 40 feet.

## No Lull in Sale of Lightning Protection

100 PER CENT OF FIRES IN INDIANA FARM BUILDINGS CAUSED BY LIGHTNING OCCURRED IN UNPROTECTED STRUCTURES

MORE and more dealers are finding out that there is at least one line on which business need never be dull. That line—and it is a very profitable one—is lightning protection. With a good standard system of protection, it is easy to fill in the dull times and slack seasons on other items in stock with this all-year and every-year seller.

Lightning rods are recognized everywhere as necessary protection for practically every building on the farm, and in town, too. They are recommended by insurance companies, state fire marshals and all electrical authorities. Lightning is the principal cause of farm fires, according to the last report of the Indiana State Fire Marshal, who says in substance:

In a recent investigation of 38,266 farm fires, it was found that 19,820, or 51 per cent, were due to lightning. Of these, exactly 100 per cent occurred in buildings not protected by lightning rods.

In other words, not a single farmer who installed proper lightning rod protection suffered loss from lightning fires.

Nearly all insurance companies handling farm business, realize the saving power of lightning rods against the attacks of the destroyer from the skies. They are convinced of the value of the lightning rod as a protector of farm property. The lightning rod now occupies the same place with relation to the protection of farm property as the automatic sprinkler does to the municipal building protection, at least as far as reliability goes.

With such facts as these at hand, dealers find it comparatively easy to work up a large and profitable business on lightning protection. In proportion to property values involved today, lightning rod protection is installed at lower cost than ever before.

The sale of lightning protection is not governed by the ups and downs of the building business. When new buildings are going up, naturally the best prospects are the owners of the new buildings. But when the building business is dull, plenty of business can be had by selling the owners of old buildings which are not protected.

## Applying Base for Stucco and Plaster

EFFECTIVE KEY MADE OF DOVETAILED WOOD STRIPS FASTENED TOGETHER IN LAYERS—DETAILS  
ON BLUEPRINTED PAGE 102

ONE of the big problems of the builder in erecting a stucco house is to provide a strong and permanent key or base for both the stucco or exterior coat and the plaster, as well as an effective insulating base. Among the efficient materials on the market is a base made of strong dove-tailed wood strips embedded under great pressure in a layer of asphalt mastic with a background of fibre board.

It is important that this base be kept dry until it is applied to the frame of the building when it is to be used as stucco base. Each wood strip is nailed with 4d nails. When nailed securely the strips are then sprayed, if dry, so as to prevent suction.

As a general rule, these wood strips are set cross grain to the under surface; if applied directly to the studs or furring strips they should be horizontal, but if put over horizontal sheathing should be vertical. Where lumber sheathing is used, the base should be applied diagonally. In cutting this material, saw across the wood strips with a sharp saw, leaving the sheets on a bench for the purpose. Joints should be broken every three or four feet. To strengthen the corner many builders use galvanized wire mesh.

When this base is used the mixture of stucco is important. The recommended mix is 1 part hydrated lime, mixed dry with 10 parts of portland cement; mix until a perfectly even color is obtained, then take 1 part of this mixture and add 2½ parts of clean sand and mix in the same manner. To this mixture add enough water to give a good stiff mortar. Apply the

first coat to the stucco base under pressure to insure filling the dovetail key. The coat should be  $\frac{5}{8}$  inch thick and beginning with the second day should be kept wet for seven days before applying the second coat.

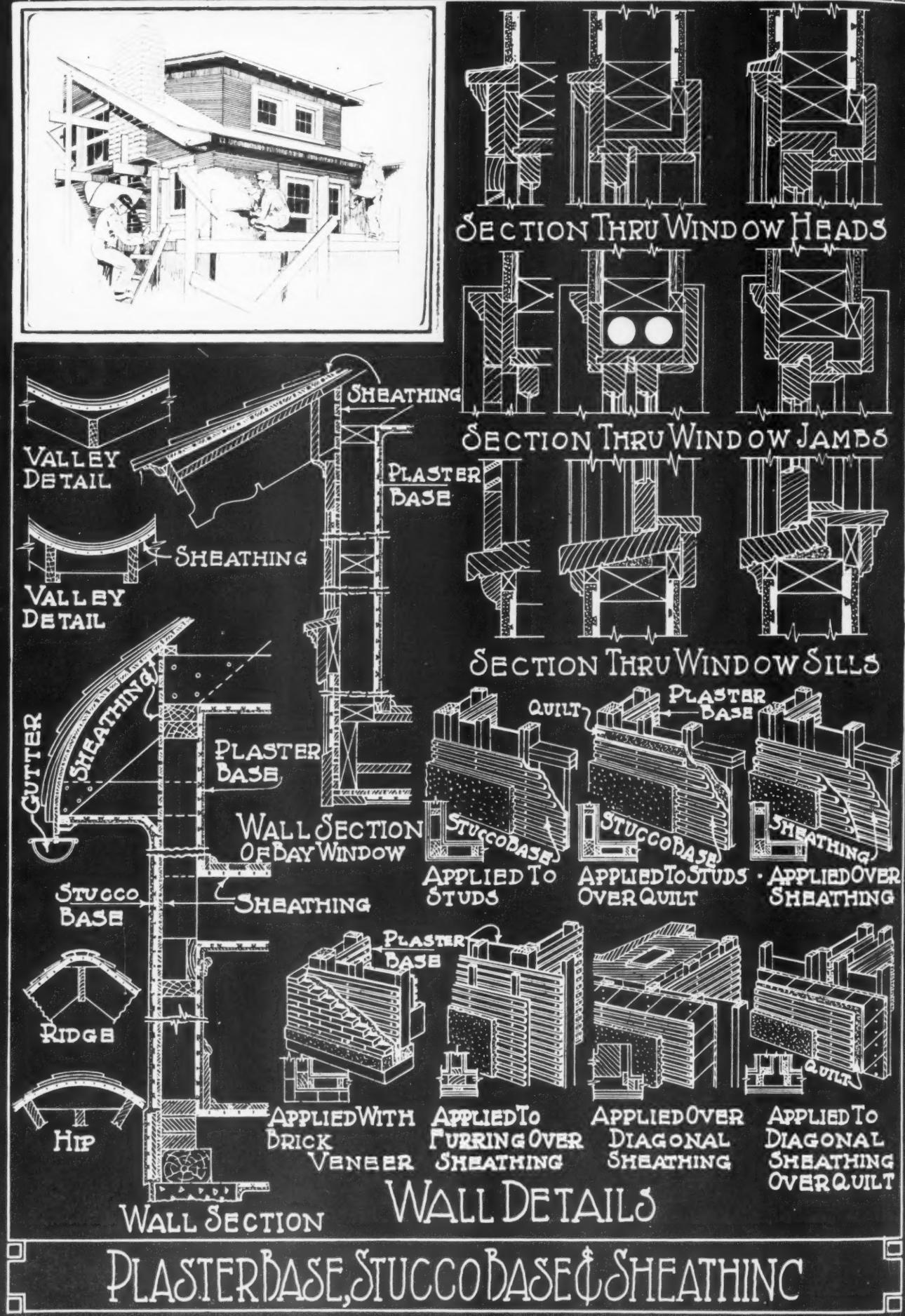
For the second coat the same mixture is used. Care should be observed that the first coat is thoroly dry before the second one is applied. The finishing coat should not be less than  $\frac{3}{4}$  inch thick and should be carried in one general direction without letting the mortar dry out at the edge. The various surface finishes are applied as in regular stucco work.

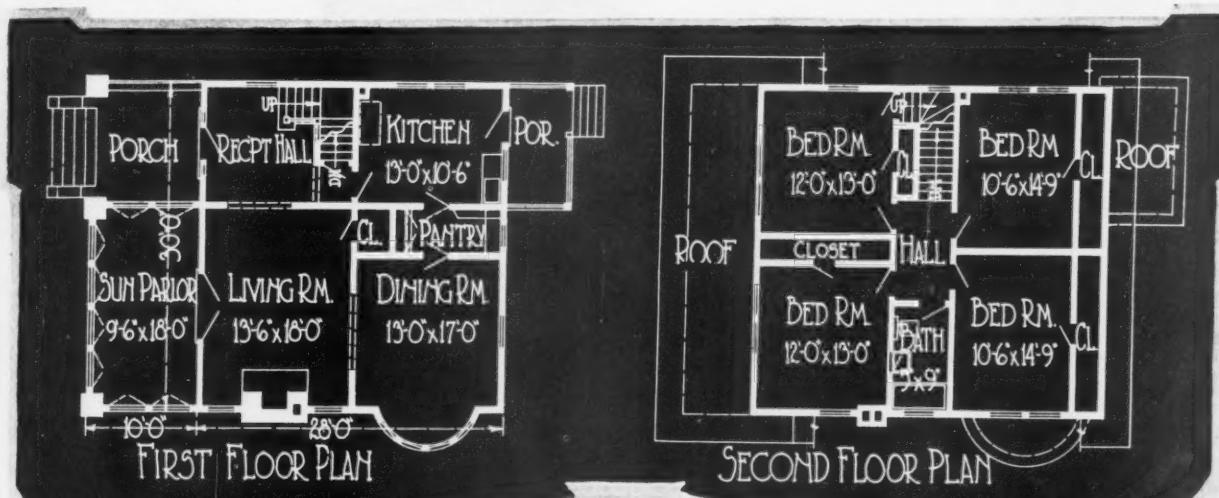
This same material is used as sheathing, the only difference being in the use of square-edged wood strips instead of the dovetailed type. This sheathing is applied in the same manner as the stucco base, being nailed to the studs, joists or rafters. Very often it is used as sub flooring. Complete specifications on the use of this material can be obtained from the manufacturer. Details of the most important features of this construction are shown in blue-printed form on page 102.



COMPLETE specifications of all kinds of contractors' machinery are listed on pages 148-164. Consult these tables for information on the machinery you will need for the coming year. You will find them condensed and complete, a hand-book containing the information every builder and contractor should have. They will not only help you, but save delay and extra trouble.

# RECOMMENDED CONSTRUCTION





**UNUSUALLY APPEALING HOME OF PLEASING DESIGN.** This attractive stucco structure embodies beauty, comfort, and substantial construction. Special wood stucco and plaster base, such as is shown in detail on opposite page, was used thruout. Always an important feature in modern homes, the sun parlor has not been overlooked in this design. It is exceptionally large, 9 feet 6 inches by 18 feet, and opens into a large living room with open fireplace. The sun parlor affords plenty of sunshine and air to this room. The front entrance leads into a reception hall which also opens into the living room. The other rooms on the lower floor are the dining room and kitchen. Upstairs are four bedrooms of good size, and bathroom. The house is 30 feet wide and 28 feet long, exclusive of sun parlor and front porch.



More Scenes Like This During the Coming Spring Will Be a Healthy Sign and a Pleasant Sight for Many Families Who Are Now Facing Greatly Increased Rentals and Possible Eviction. More Buildings Will Help to Relieve the Present Housing Shortage.

## Machinery Has Changed Building Methods

EVERY BUILDER SHOULD HAVE LABOR-SAVING MACHINERY AND EQUIPMENT TO KEEP COSTS DOWN AND SPEED UP WORK

WHEN the great Lien Chin, emperor of ancient China, decided to build the wall that was to protect his country from the ravages of barbarians to the North, he needed an army of 300,000 men. And when Pharoah took upon himself the

mighty task of building the pyramids, he likewise needed myriads of men. Slowly they toiled, lifting great stones into place and centuries passed before the work was accomplished. Today we hardly lift an eyebrow at construction projects which are by no means small when compared in size with these ancient wonders.

Why? Simply because we have today that which they lacked in the years past—machinery. The task of seventy or one hundred men has taken over by a single machine. The hoist or the derrick, and other elevating machinery, have lifted enormous burdens from human shoulders. Human power and energy has been replaced by mechanical power furnished by gasoline and steam engines and electric motors.

Most modern contractors have large sums of money invested in machinery to take care of the various steps in the course of building a structure. There is need for a mixer to mix the concrete, mortar and plaster, a block or brick machine if the house is to be built of these materials, saw rigs and wood-workers, to take care of the carpenter work on the job, such as sawing the wooden forms for the concrete, the rough lumber, etc., pumps to clear the way for excavation, steam shovels to scoop out the foundations, motor trucks to haul it away, air painting machines to save the surface and apply finish coats like



Machinery on the Job. We Need no Stronger Testimony Than Is Presented Here as to the Merits of Modern Machinery and Equipment on the Building Job. There Are the Mixer, the Gas Engine, the Pump, and Steam Derrick, All Cutting Labor Cost and Speeding Up the Work.

## Now Is Time to Study Equipment Needs

103

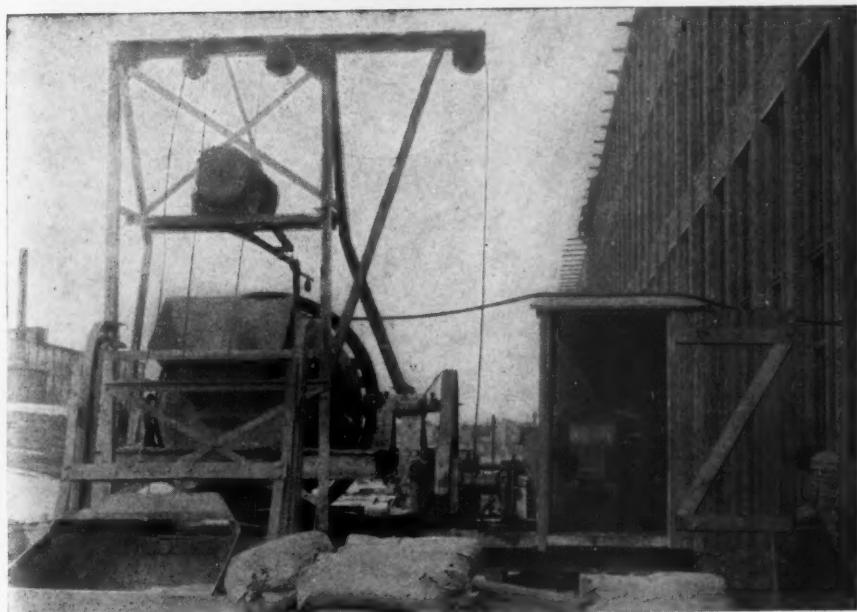


**Painting by Machinery Has Revolutionized That Industry.** The Present Age Has Seen Some Wonderful Developments in Building Equipment and This Is One of the Most Striking.

stucco, and a long list of other equipment which helps to speed up the work and cut down labor costs. This happy family of labor savers has made construction an over-night proposition instead of centuries of toil. Even the stupendous task of digging and building the Panama Canal only required seven years. Skyscrapers of twenty or more stories are built within a year.

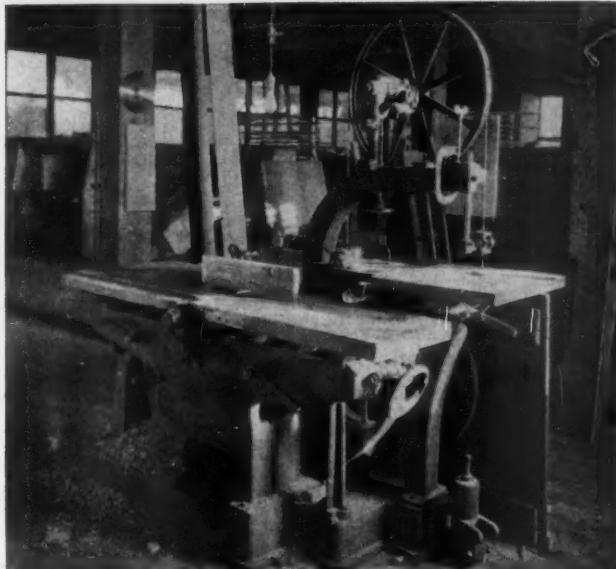
But to every contractor, large or small, the question of labor saving is one of tremendous importance and for that reason they should be interested in machinery that will bring about this result.

In 1920 there were 1,400,000 marriages and only



**Electric Power Is Becoming an Important Factor in the Building Field in More Ways Than One.** In This Picture the Motor Is Operating a Concrete Mixer. Motors Are Used to Run All Types of Builders' Machinery.

70,000 new homes were built. This glaring deficiency cannot be maintained forever and for that reason it is safe to believe that homes will have to be built and that very soon. The logical thing for the contractor in every town, as no locality is free from this scarcity of homes is to plan for the rush that is inevitable. This is psychological time to look over the equipment field and study the various labor-saving machinery that is available. For this reason the **AMERICAN BUILDER** is

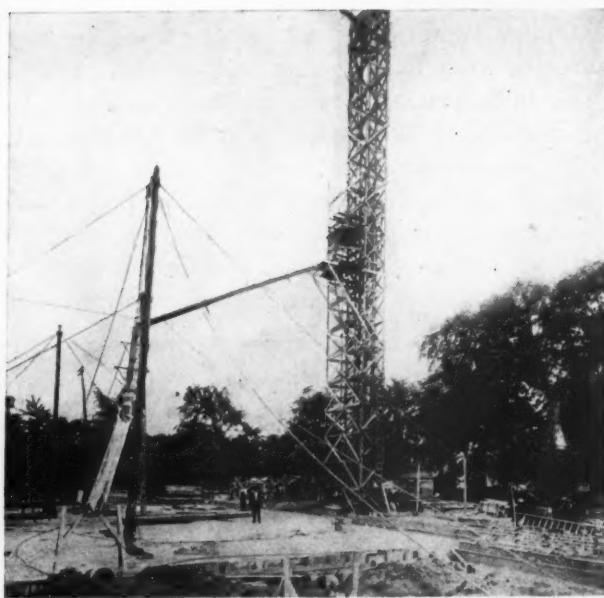


**In the Shop the Carpenter, Builder, and Contractor Are Using Woodworkers of This Type.** With Special Attachments for Many Different Kinds of Work, These Machines Are Valuable Aids in Increasing Profits.

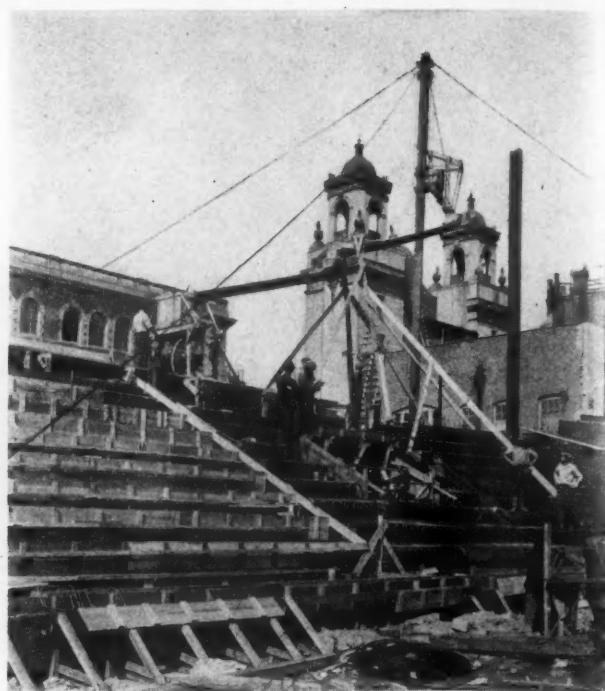
presenting on pages 150-164 of this issue complete specifications of the important machinery that builders need and use constantly. Each builder can see what particular make will satisfy his needs.

The old saying that the early bird will catch the worm is as true today as it ever was.

Machinery has made this a stone age, not of the prehistoric type, but artificial stone—concrete. For years the possibilities of portland cement were known, but the work of mixing it with aggregates was so heavy and slow by hand that little could be accomplished. Then came the first mixer. Gradually improvements were added until we have the great power mixing apparatus of the present time, mixers with capacities of several cubic yards up to great pavers running as high as 20 cubic yards. The power of the gas engine and electric motor has displaced the efforts of many men and the machinery has speeded up the work so much that concrete is the important material of construction.



One Type of Material Hoist. This One Is Operated by a Steam Engine. Concrete Is Hoisted to the Chute, Dumped and Poured by Gravity Into the Waiting Forms.



Another Unique Type of Hoisting Bucket Operated on a Single Mast. Here They Are Pouring Concrete for a New Baseball Grandstand.

So important has it become in foundation, walls, floors, and many other ways that every contractor has found it necessary to use or own a mixer of some type or other. Now that the spring is at hand with prospects of a big season brighter than for three years, the builder's duty is to take stock of his mixing equipment and machinery. To aid him in this important task, the AMERICAN BUILDER is publishing complete specifications of the mixing machines on the market.

But the machinery needed does not stop with the mixer. This is lumber to be cut on the job and in the shop. For this work the handy woodworker and saw rig has been found invaluable not only as a labor-saver, but a time saver. There is much rough lumber to be cut on all construction jobs, especially where concrete work is being done and this is easily handled by one of the sawing machines. In his shop the contractor has many special jobs which require the attachments of a variety wood worker to be completed properly.

There is no time for the laggard in the building business. That is why the motor truck has rapidly replaced horses. The latter were not fast enough. Loading and unloading took too much time; heavy duty trucks with special hoists and dump bodies supplied the means for hauling materials in large quantities, light speedy trucks take care of the emergency deliveries and the

carrying of special material. The average contractor finds the motor truck is versatile enough to take care of so many jobs that it is an essential part of his equipment.

Since the introduction and perfection of the concrete block and brick machines, many builders have taken up concrete products manufacture as a lucrative side line in addition to their regular building business. Many builders have found this particular industry so profitable that they have established large plants and are now enjoying the fruits of success.



Efficient Methods Now Call for the Cutting of Rough Lumber on the Scene of the Building Activity. Here a Handy Woodworker Is Doing the Work of Many Men. Another Cog in the Great Labor-Saving Process.

# Concrete Block Foundations

IMPORTANT FACTORS IN THE SECURING OF WATER-TIGHT FOUNDATIONS UNDER VARIOUS CONDITIONS DISCUSSED BY LEADING BUILDERS

Discussion Conducted by  
**A. J. R. Curtis**

THE article appearing in the January number of the AMERICAN BUILDER, entitled "How to Build the Foundation," in which recommended construction of both poured concrete and concrete block was described, has resulted in a number of interesting opinions from practical builders, giving their experiences in making foundations water-tight and generally satisfactory under unfavorable conditions. In the present article discussions relative to foundations of concrete block construction will be presented (these being particularly numerous), saving the data pertaining to monolithic foundations to be dealt with in the future.

The accompanying table summarizes the suggestions of 15 experienced builders of concrete basement foundations under a variety of drainage conditions and soil characteristics.

## Concrete Block Foundation Walls (Below Grade)

(Summary of the Construction Practice of Fifteen Builders who Discuss Article on Foundations in January Number of the "American Builder")

| LOCATION OF BUILDER | Soil conditions reported | Block must be strong and non-absorbent. | Bed Block carefully in dense water-tight mortar. | Fill first two courses of block solid. | Use line of drain tile around wall at level of footing and carried to outlet. | Use a standard masonry covering, such as pitch or cement mortar cont. | Back fill must be carefully tamped in. |
|---------------------|--------------------------|---|--|--|---|---|--|
| Rochester, N. Y.    | Low and Swampy.          | Yes                                     | Yes  | .....                                  | Yes   | .....   | .....                                  |
| Omaha, Neb.         | Fairly Dry.....          | Yes                                     | Yes  | .....                                  | .....   | .....   | Yes                                    |
| Davenport, Ia.      | Average.....             | Yes                                     | Yes  | .....                                  | .....   | .....   | Yes                                    |
| St. Paul, Minn.     | Wet to Dry.....          | Yes                                     | Yes  | .....                                  | .....   | Yes   | .....                                  |
| Mooseheart, Ill.    | Wet Clay.....            | Yes                                     | Yes  | .....                                  | Yes   | Yes   | .....                                  |
| Alton, Ill.         | Fairly Dry.....          | Yes                                     | Yes  | .....                                  | .....   | .....   | .....                                  |
| New Ulm, Minn.      | Wet to Dry.....          | Yes                                     | Yes  | .....                                  | .....   | .....   | .....                                  |
| Sioux City, Ia.     | Wet.....                 | Yes                                     | Yes  | .....                                  | .....   | .....   | .....                                  |
| Bangor, Maine.      | Swampy.....              | Yes                                     | Yes  | .....                                  | Yes   | Yes   | .....                                  |
| Bay City, Mich.     | Swampy.....              | Yes                                     | Yes  | .....                                  | Yes   | .....   | .....                                  |
| Detroit, Mich.      | High Water Table.        | Yes                                     | .....  | .....                                  | Yes   | Yes   | .....                                  |
| Omaha, Neb.         | Fairly Dry.....          | Yes                                     | .....  | .....                                  | .....   | .....   | Yes                                    |
| Cleveland, Ohio.    | Clay.....                | Yes                                     | Yes  | Yes                                    | .....   | .....   | .....                                  |
| Oxford, Ind.        | Clay.....                | Yes                                     | .....  | Yes                                    | Yes   | .....   | .....                                  |
| Richmond, Ind.      | Fairly Dry.....          | Yes                                     | .....  | Yes                                    | .....   | .....   | .....                                  |

Twelve of the 15 builders reported in the table place emphasis on the necessity of using block of good quality in foundations which will be called upon to resist water pressure from without. One builder writes, "Altho it is stated in the AMERICAN BUILDER article on foundations that block having an absorption of 8 per cent or less in 48 hours may be used in such cases, and I have no doubt that 8 per cent represents very satisfactory block for the pur-

pose, I have been making block of very low porosity test—2.7 per cent by weight after immersion for 48 hours—in order to secure this additional factor of safety."

Another builder says, "I have built over 8,000 concrete block basement foundations without a complaint. Our block were made of a relatively rich mix (1:4) considering our excellent aggregates, using as much water as possible in our machine without having the block sag. All block were mechanically tamped and steam cured at least 48 hours." Undoubtedly, the practice just described would produce block of high quality, certainly at least equal to the American Concrete Institute standards, as published in the AMERICAN BUILDER for May, 1920, pages 148 to 150.

A correspondent who has built several hundred foundations of concrete block construction in a section where there is a practically constant head of water almost to the surface, writes: "We assume that we have to build these foundations of concrete units

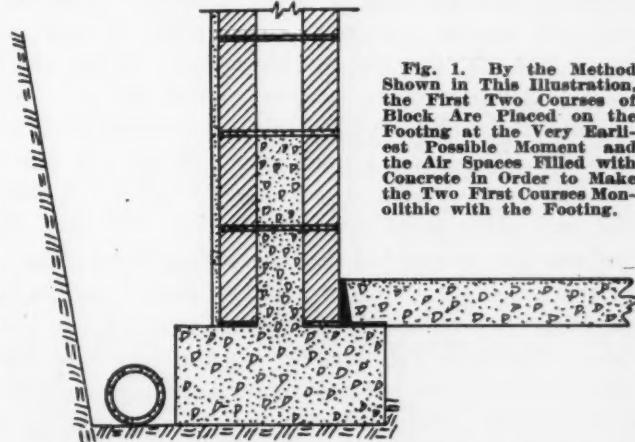


Fig. 1. By the Method Shown in This Illustration, the First Two Courses of Block Are Placed on the Footing at the Very Earliest Possible Moment and the Air Spaces Filled with Concrete in Order to Make the Two First Courses Monolithic with the Footing.

capable of sustaining loads of 1,500 pounds per square inch. We believe that block of such quality would have greater density than our local common brick." Strengths exceeding the 1,500 pounds mentioned above are commonly obtained, since ordinary hollow block must withstand a load of about 1,500 pounds per square inch, figuring the net area, which is approximately the equivalent of the specification requirement of 1,000 pounds on the gross area of the block.

### Rich Mortar and Careful Bedding

Experience in the construction of concrete block foundations has shown a favorable point over rubble and other foundations of irregular shaped units, in the ability to easily obtain dense, water-tight joints. The joints in a concrete block wall may be made of a relatively uniform bed of mortar thruout the job, there being no depressions or hollows to fill or "humps" to build up around. Nevertheless, builders recognize the joint as the weakest point in the wall as regards re-

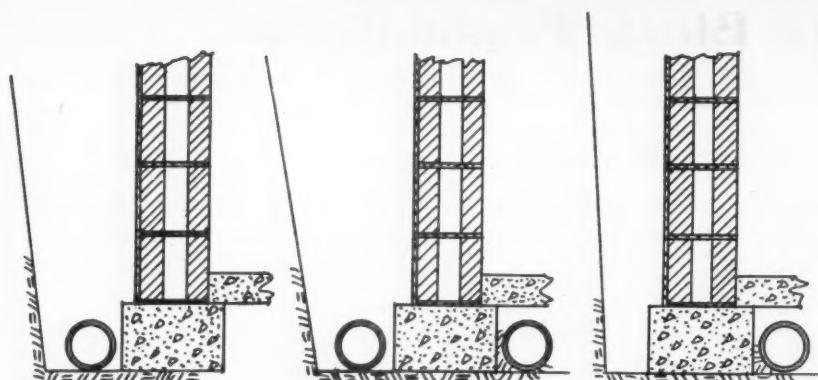


Fig. 2. Illustration to the Left Shows the Usual Placing of the Drain Tile to Relieve the Basement Wall from Water Pressure. Center Illustration Shows Precaution Used in Extreme Cases, of Tiling Around the Inside of the Footing as Well as Around the Outside. This Method Is Used Particularly to Relieve Water Pressure Under the Floor. Illustration to the Right Shows Tiling on Inside of Wall Only. This Method, While Not as Good as That Shown to the Left, Is Quicker and Less Expensive, Reducing Considerably the Necessary Excavating.

sistance to water pressure, and guard accordingly. In the above reference table notice that 13 of the 15 builders reporting call attention to the joints.

A builder who used 150,000 block in 1918 in the construction of 78 workmen's dwellings for a government operation at Bath, Maine, sends an excellent testimonial from the government superintendent as to the character of the work, and says, "The block were laid in clear cement and sand mortar, without lime, with joints as near one-quarter inch as possible. Each unit was well bedded in mortar. The rougher side of the block was placed to the outside and the joints raked. This preparatory to an exterior plaster coat."

Another builder says, "While constructing foundations for 10 houses in a small industrial group at Sioux City, Iowa, a cloudburst was experienced which filled the excavation outside the foundation (the back fill had not been made) and the builder feared the collapse of the walls. On the contrary they were found to be perfectly dry on the inside when inspected one day later. While in this instance no waterproofing was used in the mortar, we will guarantee any foundation below grade to be absolutely dry if waterproofing is used in the mortar."

A successful builder in the Northwest says, "The block must be laid in portland cement mortar 1:2. All joints, of course, must be neatly struck or pointed on the outside and all vertical joints struck and clinched on the inside space of the block." From another, "The only trouble we ever experienced came from moisture passing thru vertical joints. That was before we learned to carefully and thoroly butter both ends of the block." Several builders agree that the block should be laid in portland cement and sand mortar no leaner than 1:3.

A successful builder of several hundred house foundations writes that, because of local water conditions, he makes a practice of laying the first two courses of block on the concrete footing, then immediately filling the block to make the filling in these courses monolithic with the footing and prevent the passage of any water between the footing and the first course of block, as shown in Fig. 1.

#### Use of Tile Draining

Experience has shown that in locations subject to even occasional surface ground water, provision should be made to relieve the water pressure. This is best accomplished by means of tile lines draining the water to a suitable outlet. This precaution is advisable regardless of what material the foundation is built, and is just as necessary to prevent water from forcing up or coming thru the basement floor as it is to relieve the pressure against the walls. In well drained or naturally dry locations the use of the tile is unnecessary.

"The methods we have followed with success in the construction of several hundred building foundations, are about as follows," says a prominent midwest concrete contractor. "We thoroly drain the soil by placing a drain outside and below the footings, same to be connected to a suitable outlet. In some cases it is advisable to run drains under floors as well; in such cases cinder or crushed stone fill should be used under floors. The same kind of a fill should be used over outside foundation drains in many cases. Proper drainage will greatly increase the bearing value of soils."

Another builder who has just completed a group of 57 buildings in wet, clay soil, says: "We put a row of drain tile both on the inside and outside of the wall, along side the footing. If carried to a proper outlet these drains will remove all surface water and keep the wall absolutely dry." Another says: "It is customary in our city to lay a drain tile around the wall on the inside before the cellar floor is laid."

Most practical builders, as well as architects and engineers, prefer the method of placing the drain tile on the outside of the wall, approximately level with the footing and only a few inches from it; the tile is covered with several inches of cinders or gravel and the backfilling done in the usual way.

#### Exterior Covering

The subject of exterior treatment of concrete block foundation walls has been given a great deal of attention by the better builders and the conclusion generally reached that the necessity for treatment of this type of wall is about the same as for monolithic concrete walls. Where drainage is good, block impervious and well laid, there is no need for special surface treatment, altho under any conditions suitable treatment of the wall surface is a wise precaution and a relatively inexpensive one. On page 96 of the *AMERICAN BUILDER* for January, two optional methods of surface treatment were illustrated and described: (1) plastering of damp wall with 1:2 cement sand mortar and (2) painting of dry wall with hot tar or similar coatings.

A Detroit contractor of wide experience writes: "Concrete unit walls do not require any special treatment, any standard method of waterproofing—or damp-proofing—used on monolithic or masonry walls being equally applicable to foundation walls of concrete block. When these walls are built in soils which at times may become saturated by surface water, there is need for some reliable surface treatment of which the following have been found effective.

- (a) Three-quarter inch coating of cement mortar or water-tight mixture.
- (b) Bituminous coating such as tar or asphaltum, applied hot.
- (c) Membrane coating of tarred felt or burlap applied with hot mastic, using one or more ply, according to conditions.

"The writer has successfully built or furnished units for building foundation walls for apartment buildings in Detroit, many of them in wet clay; Englewood club-house, Detroit, where the basement is 12 feet below grade; Knickerbocker

Club, 16 feet below grade; Belle Isle Coliseum 18 feet deep; all notwithstanding hydrostatic heads. In the block plant of D. M. Terry, Rochester Mich., built on a hillside, the boiler pit was placed against a retaining wall 37 feet high under constant pressure as the hill was full of springs.

A 2-inch well point was placed horizontally thru the wall and an 8-pound flow of water was obtained. The wall is of concrete block plastered with cement mortar containing 6 per cent of waterproof paste."

A builder who has constructed many concrete block foundations for apartment buildings says: "We take only ordinary precautions in our concrete block foundations, such as we would take with the use of any other building material under similar conditions. In our own buildings it has not been necessary to coat the walls in any manner. (Some of the basements have portions as deep as 7 feet.) In low or marshy ground, however, such basements should receive exterior waterproofing treatment."

In a Michigan city, where all residence and other building foundations are provided with tiling to a suitable outlet, a block manufacturer who has supplied 75 per cent of the foundation material for dwellings and garages during the last five years says: "We have furnished block for thousands of residence foundations here, and it has been general practice not to treat the outer surface in any way. We cannot recall an instance where our block did not give entire satisfaction when laid in this way. A recently appointed

building inspector insists that foundations be plastered on the outside or given a coating of asphaltum. So far as our block are concerned, this seems to be a pure waste of time and material." (This manufacturer produces a very high quality block in wet mix molds.)

The engineer in charge of a large children's institution, using concrete block foundations in practically all buildings, writes: "We waterproof all block foundations below grade down to the footings. We use coal tar pitch for this purpose and apply it hot with a mop or old brush. We have also used coal tar dissolved with kerosene. That is not as safe as it may not be applied thick enough. All of our buildings have basements and all are absolutely dry, some of our dining rooms being located in these basements."

#### A Precaution Frequently Forgotten—Proper Backfilling

Unquestionably many builders sufficiently careful in other respects in their foundation work, neglect the very important consideration of backfill, a frequent cause for damp basement walls.

An experienced builder of cottage foundations says: "Special care must be taken, as soon as possible without crowding the walls, to carefully tamp the dirt in between the wall and the excavation. The finished grade must slope away from the foundation."

Another builder gives his experience with backfills as follows: "We regard the matter of backfill of utmost importance. To illustrate this, permit me to cite a case with which we were connected. The owner complained that after each rain moisture got into his cellar thru the foundation. We took some men out to the job and found that in excavating the dirt had been undercut, leaving a space 6 inches or more between wall and dirt bank at the bottom of the foundation with practically no space at all between the wall and dirt at the grade line.

"In backfilling the dirt had been tamped around the foundation but lumps had caught a foot or two below the surface so that there was no dirt against the wall at the bottom. After digging down by the use of a hose we were able to fill a yard of dirt into this space. After thoro puddling and compacting there was no further seepage into this cellar, even during the heaviest rains."



ARE your clients looking for something entirely new and original in home designs? Show them the Art Insert in the AMERICAN BUILDER. One design in each issue until the Street of Beautiful Homes is completed. Every type of home is shown in this Street of Beautiful Homes. Keep them for use.

#### Comparative Compression and Absorption Tests on Concrete Block

| LOCATION           | Aggregate        | Compressive<br>lbs. per<br>gross area | Strength<br>in sq. in.<br>net area | Per cent ab-<br>sorption of<br>water in 48<br>hours |
|--------------------|------------------|---------------------------------------|------------------------------------|---|
| Cleveland, Ohio    | Sand and Pebbles | 2050 lbs.                             | 3000 lbs.                          | 4. 2% (Block)                                       |
| " "                | " "              | 1750 "                                | 2650 "                             | 5. 2% (Block)                                       |
| Beloit, Wis.       | " "              | 3200 "                                | 4650 "                             | 5.36% (Block)                                       |
| " "                | " "              | 2710 "                                | 4050 "                             | 5.36% (Block)                                       |
| Madison, Wis.      | " "              | 2120 "                                | 3380 "                             | 6. 0% (Block)                                       |
| " "                | " "              | 1867 "                                | 2900 "                             | 6. 0% (Block)                                       |
| Cleveland, Ohio    | " "              | 2738 "                                | 3000 "                             | 3. 3% (Block)                                       |
| " "                | " "              | 3000 "                                | 3000 "                             | 3.88% (Block)                                       |
| " "                | " "              | 3103 "                                | 3103 "                             | 3.75% (Block)                                       |
| Springfield, Mass. | " "              | 3470 "                                | 3470 "                             | 5. 9% (Block)                                       |
| South Bend, Ind.   | " "              | 830 "                                 | 1750 "                             | 6. 1% (Tile)  |
| " "                | " "              | 820 "                                 | 1720 "                             | 7. 4% (Tile)  |
| Chicago, Ill.      | " "              | 1220 "                                | 2300 "                             | 6. 2% (Tile)  |



## Planning Home Comforts

PROVISION FOR AMPLE ELECTRICAL OUTLETS SHOULD BE MADE WHEN HOUSE IS PLANNED

By Grace T. Hadley

*Society for Electrical Development*

**A**N ELECTRICALLY equipped home means less drudgery for the homemaker and more comfort for the entire family, but comfort which can only be enjoyed in a home that is properly wired for electricity. The arithmetic of electricity is simple. It adds leisure hours to the day, subtracts worry and hard work, multiplies home comforts and divides the work with pleasure. However, such pleasure depends largely upon the flexibility of the wiring system in the home.

When the wiring is being installed is the right time to make sure that one has sufficient outlets for the various uses to which electricity is to be put for the comfort, convenience and decoration of the household. Plenty of the right kind of outlets, even if they are not to be made use of at the time of turning on the current, will provide for possible use of new appliances which may be found necessary before many months have passed.

It is indeed wearisome to climb onto a chair and unscrew a lamp every time there is need to operate an appliance. There should be facilities for the operation of appliances independent of the lighting system. It is also inconvenient to have to move the divan or other piece of furniture in order to find an outlet.

then it is indeed disappointing if the plug on the appliance does not fit the outlet. Some thought and attention right in the beginning will save many unpleasant experiences later on.

One of the best conveniences in the kitchen or laundry is the bull's-eye wall switch. With it, one does not have to lean down to a baseboard outlet or reach up to a lighting fixture to make connection, but with such an outlet at convenient height, one stands at ease, and when the plug is pushed in, a red bull's-eye lights up, showing that current is on. When the work has been done, it serves as a warning to disconnect the appliance, not to leave it forgetting to turn off the current.

Like all good servants, electricity can turn its energy to anything. In the kitchen for cookery and supplying hot water for domestic use by the circulation water heater; in the pantry for keeping meats and plates warm in the portable warmer or the built-in hot closet; in the dining room or the breakfast room for the electric grill, percolator, toaster or chafing dish. The ease and rapidity with which a light repast or even a complete breakfast and luncheon may be prepared is one of the advantages of the electrically equipped dining room. If there is no maid, or on Sunday night the maid is out, all kitchen work may be eliminated and the simpler cookery processes removed to the dining room table.

In the bathroom, bed or dressing room, the water cup for the morning shave, the curling iron heater or vibrator; again in the bedroom the heat pad for extra warmth and comfort in case of illness; in the sewing room, the electric iron for pressing frills, gowns, baby dresses, and the portable electric sewing machine or sew motor that may be attached to any sewing machine;



**Without Electricity The Home Is Not Complete. That Is Why Builders Are Studying Equipment That Will Add Joy to the Home and "Kiddies." When Planning a House Don't Forget the Wiring and Outlets. They Determine the Limits of Future Comfort.**

## Electricity Appeals to the Housewife

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in the laundry the electric washer for the real cleansing of clothes and the six-pound iron for ironing them smoothly, in fact in every phase of housework, electricity can do it silently and efficiently. As has been pointed out by household specialists, household appliances should be chosen because they fill a real need, are well made, are easy to keep clean, are proper material for purpose intended, are graceful or good looking in appearance.

In a modern six-room, one family house, a simple basic installation of wiring might cost \$250, not including the fixtures, but prices of material and labor fluctuate so much that it is hardly possible to state a cost applicable to all communities. The number of outlets would be thirty-one, distributed as follows:

|   |   |
|---|---|
| Living room—3 lights, 1 convenient outlet, total.....     | 4 |
| Dining room—2 side lights, 1 center, 1 outlet, total..... | 4 |
| Bedrooms (3)—2 lights, 1 outlet.....                      | 9 |
| Halls—2 lights .....                                      | 2 |
| Attic (storerooms)—2 lights.....                          | 2 |
| Pantry—1 lights, 1 outlet.....                            | 2 |
| Porch—1 light .....                                       | 1 |
| Bath—1 light, 1 outlet.....                               | 2 |
| Cellar—2 lights .....                                     | 2 |
| Comb. kitchen-laundry—2 lights, 1 outlet.....             | 3 |

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A tentative, quite conjectural working schedule in such a home might run something like this:

7 A. M. Mrs. Wise arises, presses a button and floods her bedroom with cheerful light. Passing into the bathroom, the fresh, cold water and electric vibrator rejuvenate her countenance. In 15 minutes she is dressed, and after airing the bedroom she descends to the dining room.

7:30. The small table in breakfast alcove is equipped



*She Looks as if She Might Be Serving Tea. Washday No Longer Is an Ordeal if Provided for When the Home Is Planned. Laundry Equipment Is an Important Item in the Contractors' Category.*

for table cookery. A turn of the switch and the grill is at work with bacon sizzling in lower pan and bread toasting on top. From the refrigerator she brings fruit, cream, butter and eggs. Coffee is made. The family sit down to a hot meal. The required things are at hand so there is no running back and forth to the kitchen.

8:00. The dishes are quickly gathered, wiped off with a paper napkin, piled on a wheeled serving table and then easily pushed to the pantry to be cleansed.

8:30. The beds are made. The electric cleaner is then brought forth from a handy closet and is run over the rugs. It searches deep for the dirt. Dusting is not the hard task it used to be when the old cleaning tools were used, "dust-scatterers" expresses what they were when the broom first disturbed the dust, then a dust cloth chased it from the places it settled into the atmosphere.

9:30. The hard work done! Now there is time for the daily mail, correspondence and the beloved women's magazine, just arrived with its wealth of helpful hints, its many suggestions for lifting the home to a high new level of comfort, convenience and efficiency.



**I**F old paint does not adhere well, scrape the surface with a stiff wire brush to remove all scale, then dust with a stiff brush.

Spots from which much of the old paint is scraped should be touched up with a thin coat of paint, reduced with turpentine.

After this has dried, the surface is ready for the first coat of new paint.



*An Electrical Kitchen. No Danger of Fire Here, Even Tho the Children Insist on Playing with the Mysterious Switches and Buttons. Clean, Sanitary, Compact Kitchens Are the Result of Many Electrical Conveniences, Which Take Up Only a Minimum of Space.*



**A**rchitectural Detail of Colonial Doorway. One of the most charming parts of a Colonial home is the quaint, dignified doorway which combines hospitality and beauty in its design. In this detail the door, fitted with the old-fashioned knocker and door handle, is flanked by two artistic panels and surmounted by a small balcony with ornamental iron railing. The balcony is supported by round and rectangular columns which rest on the small landing of brick. The few steps making up the approach are also brick. As the doorway is one of the important details in this type of home, it is important that the builder know its pertinent features. Colonial homes are increasing in popularity despite the fact that this design is one of the oldest in use.

# Growing Popularity of Painted Walls and Ceilings

ANOTHER INTERESTING ARTICLE OF AN INSTRUCTIVE SERIES—FLAT PAINT USED EXTENSIVELY IN HOMES

By C. M. Lemperly

**W**E have no purpose in this article to make unfair comparisons of various methods of wall and ceiling decoration. Each method has its place. There is no question but wallpaper will always have its vogue, altho in recent years the popularity of painted walls and ceilings has increased to an extent which warrants further examination into the merits of the so-called flat or semi-gloss paint.

This popularity has extended into some of the finest homes, as well as the humblest cottages. It was formerly thought that painted walls and ceilings were only for office buildings, churches, hospitals, stores, and mills, warehouses and such places. But it is logical to assume that the same sanitary properties that make painted walls good for hospitals should be recognized in the treatment of walls and ceilings for the home. And, it is also logical to assume that the same soft light reflections are beneficial to the eyes in the home as to the eyes in the hospital or office building.

There is a range of soft tints available and light reflection tests made by some of the leading electric lamp manufacturers show that a careful color selection of the wall and ceiling paint will have a great deal to do with the light diffusion from the natural daylight, and particularly from the artificial light used in the home.

There is quite a wide use of so-called cold water paints on the calcimine base. These are very attractive and serve a certain purpose. They cannot be compared in durability, strength of tone, washability or permanence with many of the high grade flat oil paints on the market.

A gallon of a high grade prepared flat paint should cover approximately 275 to 300 square feet, two coats, depending on the condition of the surface. When used over smooth plastered walls, one gallon should cover between 350 and 400 square feet, two coats.

In selecting the paint it is well for the consumer or painter to have the dealer stir it thoroly and spread out a small quantity on a test board. The material should be brushed out and careful attention should be given to the flowing and leveling properties, the whiteness—if white is desired—and the fineness of grinding. It is possible that the material might show poor grinding, lack of covering capacity and poor brushing qualities. Also, it might not be washable. To show the washing qualities, take a small piece of wallboard or similar material. When the paint has been properly applied and dried, spatter fountain pen ink on the board, make lead pencil marks, and put it to other tests. If the paint is right you should be able to wash the board clean with water and ordinary soap or linseed oil soap.

To demonstrate to your satisfaction the wearing qualities, dip small glass panels into the liquid taken from the top of the can and allow them to dry. When hard, you can determine the elasticity by the character of the film left on the glass. If the proper quality flat oil paint is obtained, it should compare very favorably in price with wallpaper or calcimined tints. As a matter of fact, it has a shade of advantage in economy over a period of years, altho the first cost may be a "toss-up."

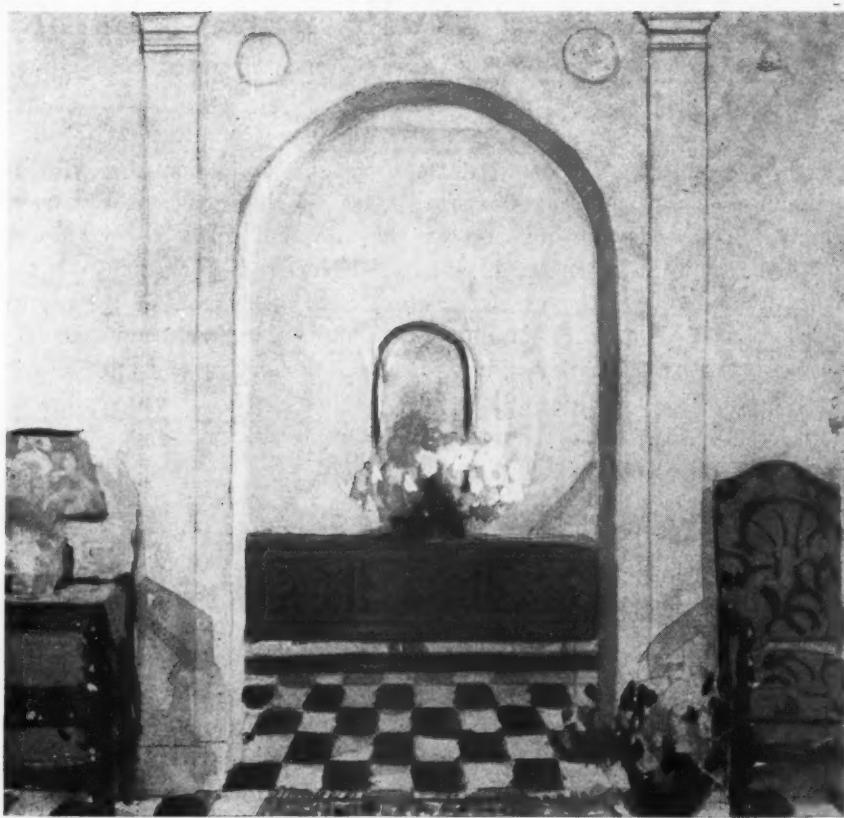
Flat paints can be applied by the painter or property



**Painted Walls Have Become Quite Popular in All Types of Homes, Public Buildings, Stores and Hospitals. Many Soft Tints Are Available and the Paint Kept Clean Very Easily. One Gallon of Good Flat Paint Should Cover 300 Square Feet, Two Coats.**

owner. Formerly the painter was obliged to prepare his own mixtures for interior work, principally white lead and oil and spirits of turpentine. While many painters continue this practice, there has been a development in recent years along the lines of prepared flat oil paints which are manufactured and trademarked by well-known manufacturing firms, so there is little possibility of going wrong and there is the added advantage of the convenience of buying and the convenience of the material being all prepared in neat packages. The prepared goods, as a rule, have an advantage in spreading power and cost per square yard.

The chief superiority of walls and ceilings treated with flat paint lies in their sanitary properties and greater durability. Walls and ceilings properly prepared with flat paints should be thoroly washable



**Restful Interiors Determine in Large Measure the Charm of a Home. Only by the Careful Selection of the Proper Wall and Interior Paints Can This Restful Impression Be Gained. Read the Article Here for Excellent Suggestions on Handling This Work.**

and waterproof. There are endless color effects possible. The paint may be applied as it comes from the package, or, if desired, the treatment may be elaborated and varied to produce an endless range of effects.

Flat paints can be applied with equal effectiveness to plaster, wall board, metal, brick, wood or Keene's cement. These flat paints are usually obtainable in from 16 to 20 attractive colors, and a range of colors just double this number can be obtained, if desired, by mixing the different shades in equal proportions.

It is very necessary in finishing porous wall or ceiling surfaces to see that the first or priming coat thoroughly seals the pores and stops the suction. Unless the sizing coat is absolutely right good results cannot be obtained from subsequent coats as the color is apt to strike-in in certain places, and cause a spotty appearance.

There are mixing sizes on the market which, if used according to directions, will thoroughly seal the surface. New plastered walls should be allowed to stand at least two months before painting to permit thorough evaporation of the moisture within. It is highly important that the surface be thoroughly dry before painting.

The second coat should usually be applied as it comes from the can. The same applies to the third coat.

In certain cases thinning may be necessary in which case pure spirits of turpentine is recommended.

In applying paint the first coat should be applied generously. At least twenty-four hours should be al-

lowed between coats for hardening and drying. With the darker colors, one coat in addition to the sealing coat will usually cover and give good results. With the lighter colors, two coats in addition to the sealing coat are generally required.

When applying the paint on new work over sized muslin, and such surfaces, apply the paint in the desired color same as above, omitting the first sizing or sealing coat.

Surfaces which have been previously painted with a flat wall paint can be repainted without sizing or sealing. See that the surface is firm, smooth and free from all loose paint.

It is possible to paint over surfaces that have been previously wallpapered. This can be done by thoroughly saturating the paper with warm water or warm wallpaper paste applied with a cloth or sponge. Scrape the paper with a putty knife and after the wall has become thoroughly dry apply the paint as before mentioned, including the sizing or sealing coat.

It is exceedingly important that flat paints like all other paints should be thoroughly stirred. It is recommended, in order to make sure of proper stirring,



**Painted Walls Are Easily Cleaned and for That Reason Sanitary. This Housewife Finds Little Trouble Cleaning Off the Wall and Giving It a Brand New Appearance. The Economy of This Arrangement Is Evident.**

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that you do not simply use a stick but that the liquid be poured off the top into another can. Then stir with a stick or paddle the pigment remaining in the first can, and gradually pour back the liquid stirring constantly as you pour. In this way you will absolutely avoid particles or specks which may appear in paints of this kind, if not properly stirred.

The surface should be in proper condition before painting and free from dirt, grease and moisture. Each coat should be allowed to dry thoroly before applying the succeeding coat.

Some unusual decorative treatments are possible in the use of wall paints by the use of glaze colors and so-called system effects. These are blended, glazed and stippled after the undercoats have been applied, the same as previously outlined. Glaze and stencil colors are on the market for this purpose and are intended chiefly for producing a non-gloss over-glaze on surfaces treated with flat oil-paint.

Full details on various effects of this kind can be obtained from the manufacturers or painters. Many of the effects possible thru the glazing and stippling system are endorsed and recommended by the leading architects and decorators, and in fact are almost unbelievable—so rich is their tone and so unusual their appearance. They resemble the finest wallpapers, and in some cases offer a range of decorative possibilities unequaled by the average wallpaper selections.



**Question**—I have some pine woodwork which was stained and waxed about fifteen years ago. The stain is badly faded and I wish to know if the wax can be removed and the woodwork re-stained. Will acid remove ink stains from wood?—W. E. W.

**Answer**—Remove the wax by scrubbing with turpentine. Allow the woodwork to dry thoroly and you will then be able to restain it. I believe you will find a penetrating wood stain or an oil stain better for this purpose than a water stain.

Apply a thin coat of white shellac for a sealer, followed by two coats of good interior varnish for a full varnish finish, or one coat of a velvet varnish for a dull rubbed effect.

Oxalic acid will probably remove the ink stains unless they are caused by a carbon ink.

**Question**—I want to know how to mix white lead and linseed oil and other ingredients, if any, to make a paint for outside use on buildings as houses and barns.—V. B.

**Answer**—The best grade of white lead will usually take  $4\frac{1}{2}$  gallons of raw linseed oil to 100 pounds of white lead. To this should be added  $\frac{1}{2}$  gallon turpentine and one quart Japan drier.

Such a paint will cover on the average of 240 sq. ft., two coats per gallon.

**Question**—I have a five-room frame bungalow and would like to know how much material is required of each, oil, turpentine and white lead.



**Contractors and Builders Are Frequently Confronted with Painting Problems That Can Be Solved by Writing to the Author of This Instructive Series of Articles on Painting and Decorating. This Advice Is Given Free and Promptly.**

The measurements of the entire building are two thousand one hundred and twenty-five square feet (2,125 sq. ft.).—W. F. P.

**Answer**—The best formula for lead and oil paints is as follows:

100 lbs pure white lead.

$4\frac{1}{2}$  gallons raw linseed oil.

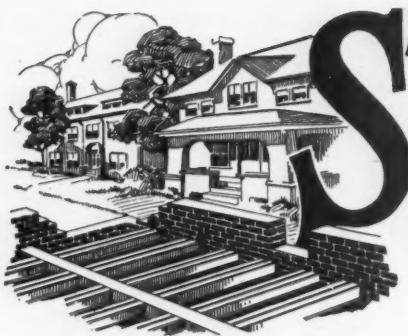
$\frac{1}{2}$  gallon turpentine.

1 qt. Japan drier.

This will cover approximately 240 sq. ft. per gallon. Your building containing 2,125 sq. ft. will therefore require approximately 9 gallons. There is a difference of course, in the quality of white leads, but a good white lead will take about  $4\frac{1}{2}$  gallons of oil to 100 lbs. of lead.

**Question**—Can wicker furniture be enameled?—F. P. R.

**Answer**—Apply two coats of ivory enamel, brushing the enamel well into the crevices. When this is dry, apply a coat of tan wall paint or oil color raw sienna, scrubbing it well into the cracks. Before the paint has a chance to set, wipe off carefully with a soft cloth, leaving the brown only in those places where the cloth does not reach readily. This will produce a very pleasing Antique Ivory, which will be very serviceable.



# STEEL LUMBER Construction

**Important Rules for Floor Joist Construction**  
 ARTICLE 3 OF STEEL LUMBER SERIES EXPLAINS SIZES, SPACING AND CENTERING OF JOISTS IN DWELLINGS AND SCHOOL BUILDING CONSTRUCTION

By Gilbert Canterbury

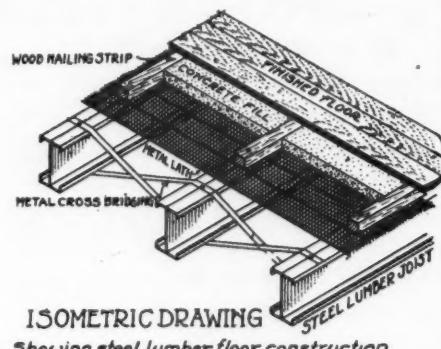
**EDITOR'S NOTE**—This is the third article of a series on the use of steel lumber in modern construction. Readers are invited to ask questions pertaining to this subject. Answers to all inquiries of general interest will appear each month in this department. Write in your problems now.

VERY simple rules of practice apply to the building with steel lumber of fire-safe first floors for dwellings. Contractors everywhere who have employed this type of construction report that it is just as simple as wood joist floor building and, in fact, very similar.

Steel lumber joists vary in depth from four inches to twelve inches but for dwelling floor construction the six-inch joist is most frequently used. In using this joist, spans should be confined to twelve to fourteen feet. As a broad general rule, it can be figured that the depth of a steel lumber joist should measure in inches one-half the span in feet. Thus a six-inch steel joist is required for a twelve-foot span; a seven-inch joist for a fourteen-foot span, etc. Because of the positive strength of the steel joist and a large factor of safety, considerable latitude is permissible with these figures in dwelling construction.

The foregoing rule for depth of joist for given

span is based on spacing the joists twenty-four inches on centers. This spacing, it will be seen is approximately twice as broad as the spacing for wood joists. In other words only about half as many linear feet of steel joists are required as would be required of wood joists.

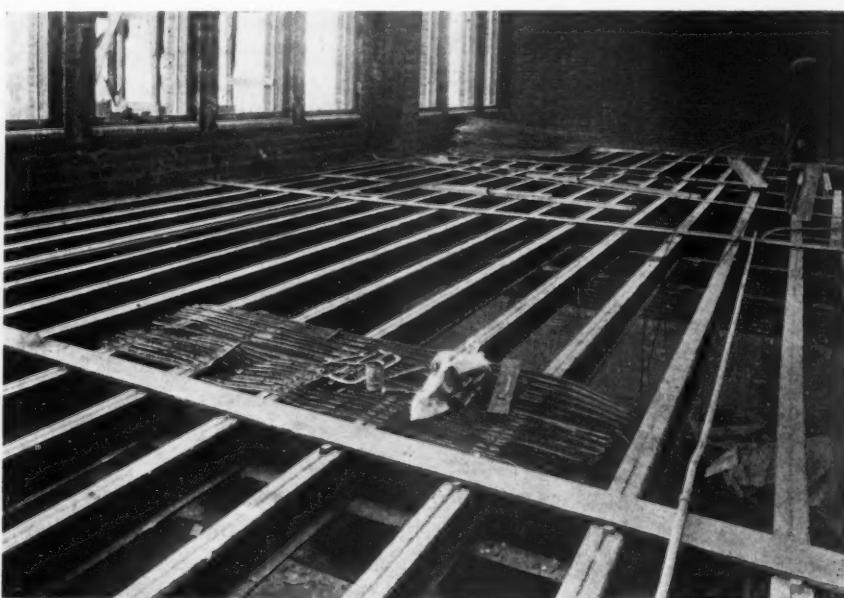


ISOMETRIC DRAWING  
*Showing steel lumber floor construction.*

Sketch Showing How Concrete Base and Finished Wood Floor Are Applied Over Metal Lumber Joists.

in wood joists construction it frequently is economical to break up some long spans in dwelling floor construction by the use of timber or multiple-joist beams, so in fire-safe first floor construction with steel lumber joists it frequently is economical to break up spans by the use of one or two structural steel I-beams. Generally speaking, the greatest economy will be achieved by holding the spans sufficiently short to permit use of the six-inch joist section. This economy will be maintained even tho it be necessary to set one or two structural steel I-beams.

Any good expanded metal lath of not less than 24 or 25 gauge will serve as centering and reinforcement for the thin concrete slab to be spread across the steel joists. A ribbed lath, however, generally proves more satisfactory being more rigid. This lath may be fastened to the joists either by nailing right into the web of the joist or by attaching spring steel clips that reach thru the mesh of the lath and snap onto the secondary flanges of the joists. These clips will generally be furnished with the joists.



Cynwyd Public School Near Philadelphia, Showing Steel Joists in Place Ready for Attracting Lath and Applying Concrete Slabs Savery & Schertz, Architects; Bowden Construction Company, Contractors.

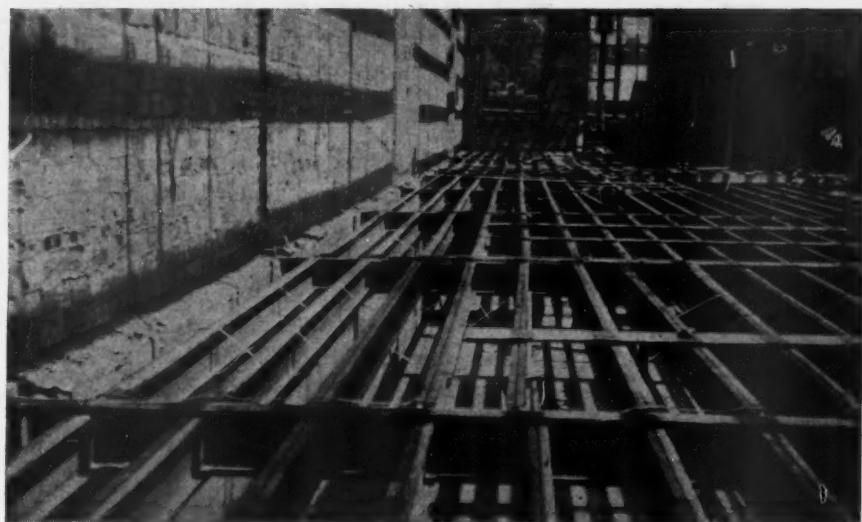
## Building Floors on Steel Lumber Joists

Nailing screeds for the floor finish are always run lengthwise with the joists and are always nailed to the joists. No wood sub-floor is necessary. The concrete slab, however, should be given time to dry thoroly before the wood floor finish is placed.

Steel lumber joists, of course, are never "fire beveled" since they cannot burn. In fact no sawing or trimming is necessary on the job. Steel lumber joists are distributed thru structural steel companies and dealers equipped to furnish the joists cut to exact length. Even for framing around openings, these will be shown on the layout sketches that any steel lumber dealer will furnish and the sections required will be cut to the proper length. Occasionally a cold quarter-inch rivet or small stove bolt will be required to fasten a framing joint, but this occurs very infrequently.

### Public School Construction

The shortage of public school buildings developed right along with the shortage of dwellings. In nearly every school district new buildings are needed badly. Indications of the first two months of the year seem to point to great activity in school building for the spring and summer. Hundreds of these new school buildings have been designed for steel lumber floors, architects having turned to this material because of its economical achievement of fire safety and because of its splendid record in school construction during the last ten years.



Store Building Showing Method of Breaking Up Joist Spans by Use of Structural Steel Beams.

The school board of a city in Indiana recently brought out for bids one high school and one grade school as the first two buildings of a program for five buildings this spring. The designs of all these schools called for tile and concrete floors. The bids on the high school and the one grade school were rejected because they cost more than the board had money in fund. Tentative bids were secured on steel lumber construction and now all the schools are being re-designed for steel lumber floors. The saving will aggregate something like \$30,000 and quicker erection will be achieved. Similar stories have come out in regard to other cities and school districts. So many new buildings are needed that school boards are being hard pressed to provide funds for them. Fire-safe construction is imperative and yet every possible economy must be effected.

In this connection, architects and contractors are sometimes prevented from all possible economies in floor construction because of an insistence on the part of school boards for uniformly flat ceilings. The average class room calls for a joist span of from 20 to 24 feet. The eleven-inch or the twelve-inch joist will be required for this. Sometimes it is possible to achieve greater economy by breaking the span with a structural steel beam and cutting it down to eleven or twelve feet so smaller joists can be used. This economy would depend, of course, upon design of the building. The school boards frequently object to this practice for the reason that the protruding beam mars the beauty of the ceiling. The structural correctness is unquestioned. It is purely a matter of looks.



Troweling Concrete Slab in Steel Lumber Flat Roof Construction.

## Hollow Building Tile Is Starred in Movie

INTERESTING FILM SHOWS METHOD OF MANUFACTURE AND INSULATION AGAINST HEAT AND COLD

By J. S. Sleeper

**A**S MOVIE scenario material hollow building tile might seem a cold proposition, yet a film has just been produced which scored the applause of motion picture trade magazine critics.

"Take unromantic tile and put human interest into it—give us a picture which will tell the part tile is playing in the romance of the twentieth century," was the Hollow Building Tile Association's instructions to a Chicago industrial film company.

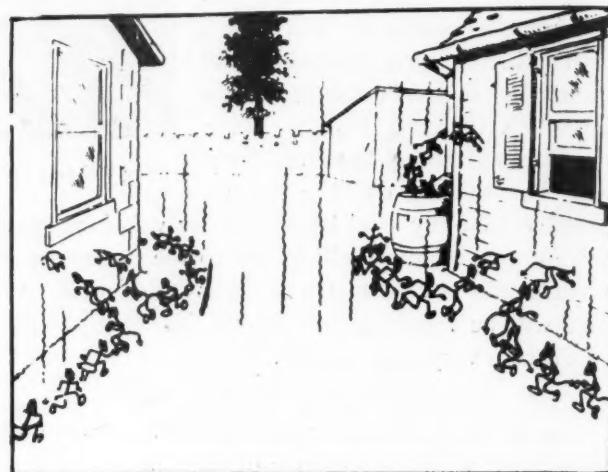
The result is a two-reel picture which, in thirty-two minutes, tells hollow building tile's story.

This picture has a busy career ahead of it. First it will make the rounds of association members. Next a tour of chambers of commerce, Rotary clubs, etc. Needless to say, it will be among those present at various builders' conventions. With one of the suitcase projection machines, the film can be shown any place where connection can be made with an electric light socket, and the picture will be exhibited before Y. M. C. A.'s, high school classes, at farmers' grange meetings. Eventually it may be booked over a circuit of "regular" movie theaters.

The first scene of the picture is Prizma photography which shows hollow building tile in natural colors. Then the film takes up the manufacture of hollow tile. Panorama views of typical plants are shown. The clay is removed from nature's treasure chest. The raw material is ground, mixed and finally comes out of the die shaped. It is cut into length, conveyed to the drying room and then burned in the kiln. There are several excellent close-up views of the fire burn-

ing the tile. At this point subtitles emphasize the fire-proof qualities, explaining that tile is burned at a heat that would melt iron.

After the audience has seen tile manufactured there comes an animated drawing, or film cartoon, which puts over the insulation properties of hollow tile.

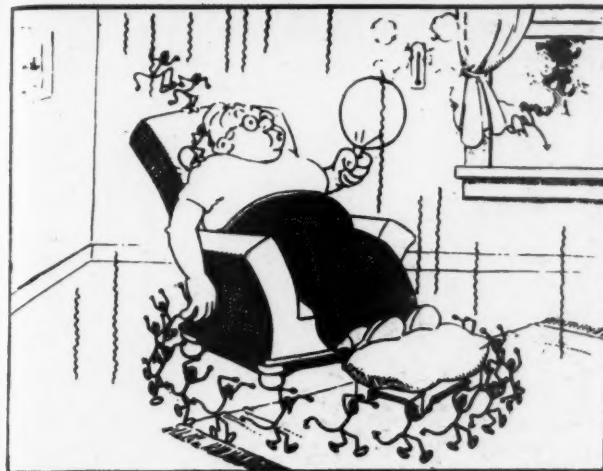


First Scene in Animated Film, Illustrating the Uses of Hollow Building Tile. Here the "Heat Devils" Are Scrambling Into Two Houses, One of Which Is Hollow Tile.

First the animation drives home the fact that the air spaces in hollow building tile are non-conductors of heat in summer. In the cartoon a hollow tile house and an ordinary house are in the foreground. Up in the sky old Sol frowns menacingly and blows his breath at the two houses. His breath at first seems to be a cloud traveling toward earth. As the cloud comes close the audience sees that it is made up of a myriad of little figures—"heat devils," armed with forked spears and adorned with forked tails. The "heat devils" dive thru the walls of both houses and disappear. A scene inside the ordinary house reveals the "heat devils" in a victory dance around a sweltering housewife. A scene inside the hollow building tile home shows the housewife perfectly comfortable and nary a "heat devil" in sight. To tell the audience what became of all the "heat devils" which were seen to dive thru the hollow tile outer wall, there flashed upon the screen a cross section of a tile wall. The "heat devils" dive thru the outer wall all right, but



Scene from Tile Film Showing How Hollow Tile Keeps Cold Out in Winter. There Are No Draughts to Endanger the "Kiddies" Who Are Playing on the Floor Around the Xmas Tree.



Inside the Ordinary Home the Little "Heat Devils" Are Dancing the Dance of Triumph Much to the Discomfiture of the Lady of the House, But—

when they encounter the air spaces they disappear in puffs of smoke. Animated thermometers register the result—106 outside, 72 inside.

Then the animated scene changes to winter and Jack Frost blows a cloud of "chilly children" toward the two houses. Similarly as in the summer scenes, the audience is impressed with the fact that tile air spaces from an insulation barrier which the cold of winter cannot penetrate.

Next comes glimpses of typical homes built of hollow tile, showing a wide variety of external appearance.

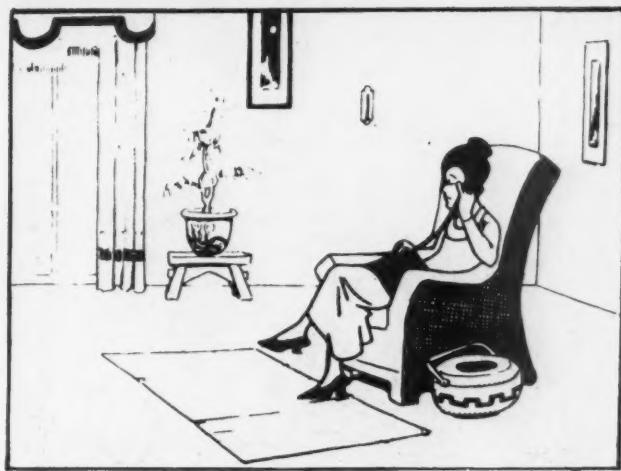
A living room set was built in the moving picture studio for the scene that follows the residence views. Two cute pajama-clad kiddies tiptoe into the living room on Christmas morning. They rush for the toys on the glittering tree. Here subtitles make note of two facts: First, that hollow tile walls have no cracks or crevices to let in draughts and there is no danger of the children catching cold by playing on the floor.

Abruptly the kiddies drop their toys and run to the window. They have heard the approaching fire apparatus. Across the street they see an ordinary house in flames.

"All their Christmas presents will be burned, too" says the little girl.

The little boy speaks. "Aren't you glad we live in a hollow tile house which can't burn?"

Then comes a wide range of hollow tile buildings—skyscrapers, factories, apartments and farm buildings. The picture closes with Prizna natural color views of farm buildings on the estate of the late Jacob Schiff.



Here It Is Different. This Housewife Is Perfectly Comfortable Despite the Heat Waves of Old Sol. Scenes from the Hollow Tile Moving Picture.

### Idaho College Offers Correspondence Course in Lumber

THE School of Forestry of the University of Idaho at Moscow offers a correspondence course in "Lumber and Its Uses." That the course is meeting a real need is attested by the large number of students registered for it since it was first announced about three years ago. Some thirty different states are represented in the enrollment.

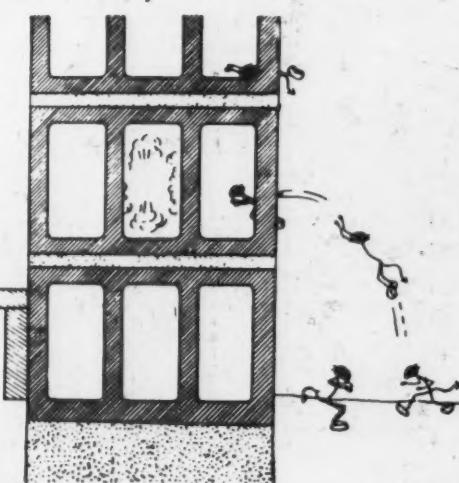
The course is designed to be of special value to lumber dealers, lumber salesmen, contractors or builders, carpenters, manual training teachers, and others connected with the wood working industries. The fee is a nominal one and includes the text book and all reference material.



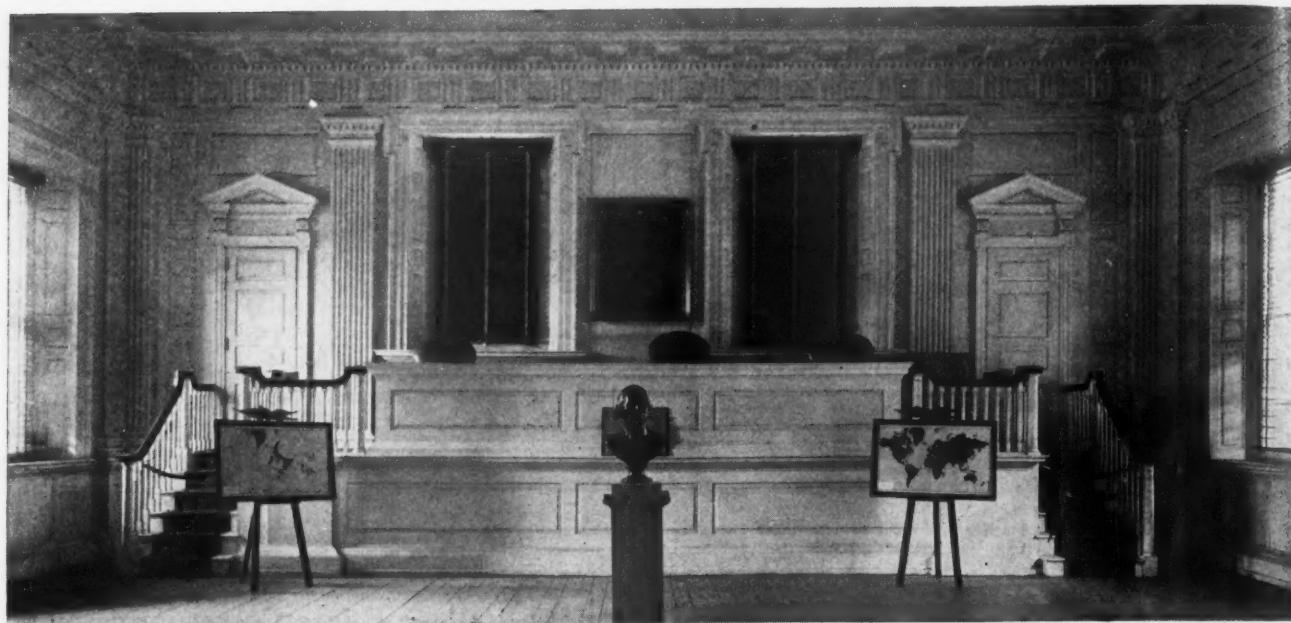
### Home Sweet Home

THIS is the sentiment that strikes a responsive chord in the heart of every individual, barbarian or super-civilized. Every father should strive to own his own home to insure that future safety and comfort of his wife and family. As a builder it is up to you to

give him ideas on what kind of homes are desirable. Pictures are the greatest and most vivid storytellers in the world. That is why the AMERICAN BUILDER is putting your message in picture, in a large special Art Insert in colors showing a Street of Beautiful Homes. Number One on this street, a beautiful Colonial home appears in this issue. It will be well worth your while studying it and putting away in your files for future reference.



The Air Spaces in Hollow Tile Form an Insulation Barrier Which the "Heat Devils" Cannot Penetrate. In the Film When the "Heat Devils" Encounter These Air Spaces They Disappear Into Little Puffs of Smoke.



Room on First Floor of Independence Hall, Where the U. S. Supreme Court Sat for the First Time. The Small Stairways on Either Side Lead to the Judges' Chambers.

## Some Colonial Features of Historic Structures

INDEPENDENCE AND CONGRESS HALLS OF REVOLUTIONARY DAYS HAVE GENUINE SPECIMENS OF REAL COLONIAL DESIGN UNEXCELED IN COUNTRY TODAY

By John F. McClaren

PROBABLY nowhere else in this country are there better or more genuine specimens of real Colonial design and construction than are to be found at Independence Hall and Congress Hall, two edifices sacred to every American, in Philadelphia. One of the buildings, Independence Hall, came into existence in 1732, and Congress Hall was built in 1787, making the former building 189 years old and the other building 133 years old.

The lines of both buildings today are precisely those of the original



Independence Hall Just as It Was Constructed in 1732. One Hundred Eighty-nine Years Old. It Contains Many Valuable Ideas in Colonial Design for Modern Builders.



Grand Stairway in Independence Hall Leading to the Second Floor from the Lobby. The Small Stairway on Extreme Right Leads to the Famous Belfry Where Hung the Liberty Bell. Colonial Architecture at Its Best.

plans and while they are most beautiful from the exterior the most attractive Colonial design and construction are to be found inside of both places. An exceptionally pretty and well designed corner in Independence Hall is the lobby from which extends a real Colonial stairway, with its wide hardwood steps, flanked on the wall side by

## Genuine Specimen of Colonial Design



In the Vestibule of Congress Hall, Showing Stairway Leading to Old Senate Chamber. Note the Old-Fashioned Hinges, Locks, and Bolts. This View Is Considered One of the best Specimens of Colonial Design in America Today.

panels and on the opposite side by a balustrade. This stairway which eventually leads to the belfry where once hung the famous Liberty Bell also leads to a large room at the entrance of which is a doorway of exceptional Colonial design. This doorway, in beauty and design, is possibly exceeded by the specimens of Colonial constructive thought found in what is known as the Declaration Room, the room where the Declaration of Independence was signed. Here the windows, doorways and pillars as well as the ceiling and chandelier afford a study in Colonial design which architects consider superior to anything along similar lines in this country.

In Congress Hall, just inside the entrance, some wonderful specimens of Colonial doorways, windows and stairway are to be seen. The great double doors, leading to the chamber where the U. S. Senate once sat, with their great long hinges, bolt and locks, are considered especially attractive. These doorways and stairways have been the basis of study of many architects of not only this but of foreign countries and are considered as unsurpassed in design. Except as to renewal of the paint the design of none of these architectural features in this grand old building or Independence Hall have been changed to the slightest degree.



### Architects to Exhibit in Paris

BY invitation of the Societe des Artistes Francais, of which M. Laloux is President and in col-



Quaint Colonial Stairway Leading to Senate Chamber in Congress Hall. Many Beautiful Homes Being Erected Today Are Fitted with Stairways of This Design.

laboration with the French Department of Fine Arts, there will be held an exhibition of American Architecture in the Salon des Artistes Francais in Paris, opening on May 1st and lasting for about two months.

The exhibition, which has been arranged thru the offices of M. Maurice Casenave, Director General of French Service in the United States, is being prepared under the direction of the Committee on Foreign Building Co-operation of the American Institute of Architects.

Architects desiring to exhibit drawings or photographs are requested to communicate with Mr. Julian Clarence Levi, Secretary, 105 W. 40th St., N. Y.



Congress Hall as It Stands After a Century and Half. Note the Characteristic Colonial Windows of Small Panes and Doorways. These Two Buildings Are Eloquent Testimonials of the Character of Work Done by Builders During the Early Days of the Colonies.

# DESIGN of SAFE CONSTRUCTION

By Charles W. Leigh

Associate Professor of Mechanics, Armour Institute of Technology

## Steel Columns

ARTICLE FIFTEEN OF AN EXTENSIVE SERIES OF STRENGTH OF MATERIALS

**I**N the February article of this series, the Winslow Formula for wooden columns was presented.

This formula is not difficult to apply because the only quantities used were the least dimension, the length and the area of the cross-section. But the straight line formulas for steel and cast iron columns require the use of a standard handbook. For instance, the American Bridge Formula is:

$$\frac{P}{A} = 16,000 - 70 \frac{l}{r} \dots \dots \dots (1)$$

where  $P$  is the safe load that the column will carry,  $A$  the area of cross-section,  $l$  the length of the columns in inches and  $r$  is the least radius of gyration.

Now, the radius of gyration of the cross-section of any beam or column is found by dividing the moment of inertia  $I$  of the cross-section by the area and extracting the square root of the quotient. If we represent the radius of gyration by  $r$ , then we may write the formula:

$$r = \sqrt{\frac{I}{A}}$$

Suppose, for example, that the cross-section of a rectangular beam is 6 by 8 inches, as in Fig. 1. Now, in previous articles it has been shown that  $I$  for a rectangle about the gravity or neutral axis  $AB$  is

$$I = 1/12 bh^3$$

But  $b = 6$  and  $h = 8$ . Therefore

$$I = 1/12 \times 6 \times 8 \times 8 \times 8 = 256$$

Also,  $A = 6 \times 8 = 48$  square inches.

$$\therefore r = \sqrt{\frac{256}{48}} = \sqrt{5.33} = 2.3 \text{ inches}$$

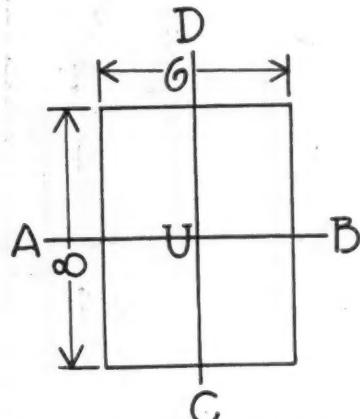


Fig. 1. Cross-Section of Rectangular Column.

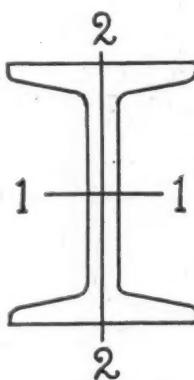


Fig. 2. Cross-Section of an I-Beam.

Again, if  $CD$  be taken as an axis thru  $O$ , the center of gravity of the section, perpendicular to  $AB$ , then

$$b = 8 \text{ and } h = 6$$

$$I = 1/12 bh^3 = 1/12 \times 8 \times 6 \times 6 \times 6 = 144$$

$$r = \sqrt{\frac{I}{A}} = \sqrt{\frac{144}{48}} = \sqrt{3} = 1.73$$

Now it is proven in mechanics that if a figure has axes of symmetry or axes which divide the figure into two equal parts, such as  $AB$  and  $CD$ , that the moment of inertia with respect to  $AB$  is greater than for any other axis thru  $O$ , the center of gravity. Also, that  $I$  for  $CD$  is less than for any other axis thru  $O$ . In designing beams the beam is strongest when placed so that the neutral axis or axis of no stress for a cross-section is the gravity axis for which the moment of inertia is the greatest.

But in columns the moment of inertia used must be with respect to an axis for which it is the least, for it is about this axis that buckling of the column takes place, if the column fails under the load. But the least  $I$  is the one which gives the least radius of gyration  $r$ .

Now for the different shapes of the cross-sections of iron columns it would be unnecessary work to calculate the radii of gyration, since they are given in handbooks. It will be my object to give the reader a few ideas in the use of a handbook.

The following table contains a few of the values given on page 175 of a Carnegie handbook, on the detailed properties of I-beams, a section of which is shown in Fig. 2.

TABLE I

| Dep. of Beam inches | Weight per ft. Lbs. | Area of Section | AXIS 1-1 |      | AXIS 2-2        |      | Section Modulus |
|---------------------|---------------------|-----------------|----------|------|-----------------|------|-----------------|
|                     |                     |                 | I        | r.   | Section Modulus | I    |                 |
| 15                  | 55                  | 16.18           | 511      | 5.62 | 68.1            | 17.1 | 1.02            |
| 15                  | 42                  | 12.48           | 441.8    | 5.95 | 58.9            | 19.9 | 1.08            |
| 12                  | 55                  | 16.18           | 321      | 4.45 | 53.5            | 17.5 | 1.04            |
| 12                  | 31.5                | 9.26            | 215.8    | 4.83 | 36              | 9.5  | 1.01            |
| 10                  | 40                  | 11.76           | 158.7    | 3.67 | 31.7            | 9.5  | .9              |
| 8                   | 18                  | 5.33            | 56.9     | 3.27 | 14.2            | 3.8  | .84             |

Fig. 2 shows that axes 1-1 and 2-2 are axes of symmetry. Therefore  $I_{1-1}$  is the greatest and  $I_{2-2}$  the

## Design of Safe Construction

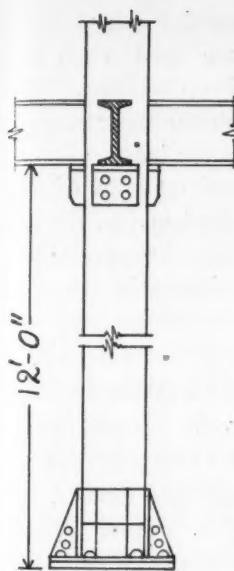


Fig. 3. Typical I-Beam Column.

least of the gravity axes. Then in using an I-beam or a column the radius of gyration for axis 2-2, which is seen to be the least, is the one to use.

The American Bridge Formula:

$$\frac{P}{A} = 16,000 - 70 \frac{l}{r}$$

is safe to use for slenderness ratio or the ratio  $\frac{l}{r}$  between 40 and 100. The fibre stress developed, viz.:  $\frac{P}{A}$  for dead and live loads must not exceed 13,000 pounds. Now if  $\frac{l}{r} = 30$ , then

$$\frac{P}{A} = 16,000 - 70 \times 30 = 13,900 \text{ pounds}$$

which exceeds a safe limit. For any value of  $\frac{l}{r}$  between 12 and 40, use 13,000 pounds as a safe stress or

$$\frac{P}{A} = 13,000. \quad P = 13,000 A$$

is the safe load to be carried.

If the slenderness ratio is from 100 to 190, Formula 1 will give results too large for safety. The following table is taken from Carnegie, Page 159:

TABLE II

| Ratio | Amount | Ratio | Amount |
|-------|--------|-------|--------|
| 100   | 9000   | 150   | 5500   |
| 110   | 8000   | 160   | 5000   |
| 120   | 7000   | 170   | 4500   |
| 130   | 6500   | 180   | 4000   |
| 140   | 6000   | 190   | 3500   |

For any values of the ratio between those given, the corresponding safe stress may be found. The specifications require "that when a bar is used for bracing and combined stresses due to wind and other loading, the working stresses may be increased 25 per cent, provided the section thus found is not less than that required by the dead and live loads alone" (Carnegie, page 159).

Suppose a 15-inch 42-pound I-beam is to be used for a 12-foot column. To find the load it will safely carry. Now,  $l = 12 \times 12 = 144$  inches. From Table I,  $r = 1.08$  and  $A = 12.48$ .

$$\frac{l}{r} = \frac{144}{108} = 133\frac{1}{3}$$

Since  $\frac{l}{r}$  is greater than 100, we must use Table II.

For ratio of 130,  $\frac{P}{A} = 6,500$  and for 140,  $\frac{P}{A} =$

6,000. Since  $133\frac{1}{3}$  is  $\frac{1}{3}$  of 10, the difference between 130 and 140, the value of  $\frac{P}{A}$  is found by getting  $\frac{1}{3}$  of 6,500 — 6,000 =  $\frac{500}{3} = 167$  and subtracting from 6,500 or

$$\frac{P}{A} = 6,500 - 167 = 6,333 \text{ pounds.}$$

$$\therefore P = 12.48 \times 6,333 = 79,000 \text{ pounds}$$

If we had substituted  $\frac{l}{r} = 133\frac{1}{3}$  in Formula I,  $\frac{P}{A} = 16,000 - 70 (133\frac{1}{3}) = 16,000 - 9,331 = 6,700$

$$\therefore P = 12.48 \times 6,700 = 83,000, \text{ approximate}$$

This gives a result 4,000 pounds greater than specifications. For combined bracing and loads this result would probably be safe. Carnegie Tables give the former. If the reader has access to a Carnegie, on page 296 he will find a table for safe loads in thousands of pounds. For a 12-foot column he will find a safe load for a 15-inch 42-pound I-beam to be 79.0 thousand pounds.

Suppose the problem is to find the size of an I-beam used as a 10-foot column to carry a load of 60,000 pounds. On page 296 of Carnegie, the first column contains lengths of column iron. Follow the horizontal line from the 10 feet coming to 65.9 and 50.2 thousand pounds. We must use the I-beams correspond-

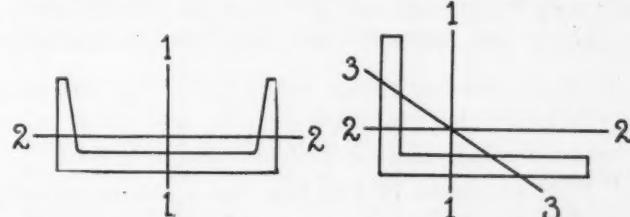


Fig. 4. Cross-Section of a Channel Showing Moment of Inertia Axes.

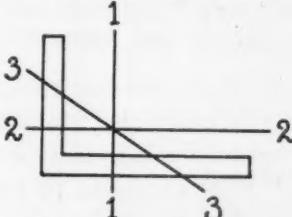


Fig. 5. Cross-Section of an Angle Iron with Moment of Inertia Axes.

ing to the greater load, or 12-inch 31 1/2-pound I-beam.

When a channel is used as a column the safe load is figured as before by Formula 1. On page 176 of Carnegie will be found the elements of sections shown in Fig. 4. Let us find the safe load a 6-foot 10-inch 15-pound channel will carry as a column. Now  $l = 6 \times 12 = 72$ ,  $A = 7.35$  and  $r_{2-2}$  the least radius of gyration = .72.

$$\frac{l}{r} = \frac{72}{.72} = 100$$

Since the ratio is 100 we may use Formula 1.

$$\frac{P}{7.35} = 16,000 - 70 \times 100 = 9,000$$

$$P = 66,150 \text{ pounds.}$$

Table II gives the same result.

If the problem is to find a channel 8 feet long for a column to carry 50,000 pounds, the solution is of the cut and try type. For, in Formula 1, both  $A$  and  $r$  are unknown. We must then turn to the handbook, select a channel that we think will fit, get the values

for  $A$  and  $r$  and substitute them in Formula 1.

$\frac{P}{A}$  should be equal to  $16,000 - 70 \times \frac{l}{r}$ . But they will probably never be exactly equal. They should be brought as near as possible by choosing different channels, always remembering that  $\frac{P}{A}$  must never be

greater than  $16,000 - 70 \frac{l}{r}$ , as that is the maximum allowable stress.

In our problem  $P = 50,000$  and  $l = 8 \times 12 = 96$ .

Suppose we try a 10-inch 35-pound channel, for which  $A = 10.29$  and  $r = .67$ .

$$\frac{50,000}{10.29} = 4,860 \text{ pounds}, 16,000 - 70 \frac{96}{.67} = 16,000 -$$

$$10,000 = 6,000, \text{ approximately}$$

This shows that we have a channel with a larger section than necessary, but not far from the correct one. Try a 10-inch 30-pound.  $A = 8.82$  and  $r = .67$ .

$$\frac{50,000}{8.82} = 5,670 \text{ and } 16,000 - 70 \frac{96}{.67} = 6,000$$

Now  $\frac{l}{r} = \frac{96}{.67} = 145$  and from Table II a ratio of 145 calls for a maximum working stress of 5,750 pounds.

Since  $\frac{P}{A} = 5,670$ , the 10-inch 30-pound channel will carry the load.

If  $\frac{P}{A}$  had been more than the allowable value from Table II, another choice would have been necessary.

In order that this idea may be well fixed in the reader's mind, another problem will be solved.

Find a channel 10 feet long for a column to carry 75,000 pounds.

Try a 12-inch 40-pound channel.  $A = 11.76$ ,  $r = .75$ , and  $l = 120$  inches.

Then  $\frac{l}{r} = \frac{120}{.75} = 160$  and from Table II a maximum workable stress is 6,000 pounds.

$$\frac{P}{A} = \frac{75,000}{11.76} = 6,400.$$

This is too high. We must have a greater area or a greater radius of gyration  $r$ . This would call for a 15-inch channel. Try a 15-inch 45-pound channel.  $A = 13.24$  and  $r = .88$ .

Now  $\frac{l}{r} = \frac{120}{.88} = 137$ ; from Table II, safe stress is 6,200 pounds.

$$\frac{P}{A} = \frac{75,000}{13.24} = 5,670 \text{ pounds}$$

Since 5,670 is less than 6,200 the channel is safe.

A case of importance is that of angle irons. The cross-section as found in any handbook is shown in Fig. 5. Among the elements given in the tables of handbooks are size, weight per foot, area of section,

$r$  for 1-1 axis,  $r$  for 2-2 axis and  $r$  for 3-3 axis. The  $r$ 's for axis 1-1 and 2-2 are used when angle irons are riveted to plates in built-up sections. When an angle iron is used alone as a column it is always the  $r$  for axis 3-3 that is used, as it is the least.

The problems for designing steel columns of angle irons, and built-up girders are solved in just the same way as for I-beams and channels. Any good handbook will give the least radius of gyration to use in Formula 1.



### Identification of Oak Woods

OVER fifty species of native oaks assume the proportions of trees, and about twenty-five are used for lumber. After the oaks are cut into lumber, there is no means known to the U. S. Forest Products Laboratory by which they can be identified as to exact species. By examination of the wood alone, however, it is easy to separate the oaks into two groups—the white oaks and the red oaks; and for most purposes, fortunately, it is not necessary to classify them any further.

The white oak group includes true white oak, swamp oak, bur oak, cow oak, post oak, overcup oak, and chestnut oak. The red oak group includes true red oak, yellow or black oak, scarlet oak, Spanish oak, Texan oak, black jack, water oak, willow oak, and laurel oak.

The color of the wood is a ready but not absolutely reliable means of distinguishing the white oaks from the red oaks.

For more accurate identification it is necessary to examine the pores of the wood. These will be found as tiny holes on a smoothly-cut end surface, the largest being visible to the unaided eye. They are not of uniform size throughout each growth ring, but are considerably larger in the wood formed in the spring, decreasing in size rather abruptly towards the summerwood. The large pores in the springwood of the heartwood and inner sapwood of the white oaks are usually plugged up with a froth-like growth called tyloses, and those of the red oaks are open. This feature, however, is not so reliable for classification as the character of the much smaller pores in the summerwood.

To tell for a certainty whether a piece of oak belongs to the white or red oak group, cut the end grain smoothly with a sharp knife across several growth rings of average width. With the aid of a hand lens examine the small pores in the dense summerwood. If the pores in this part of the growth ring are plainly visible as minute rounded openings, and are not so crowded but that they can readily be counted, the wood belongs to the red oak group. If the pores in the summerwood are very small, somewhat angular, and so numerous that it would be exceedingly difficult to count them, the wood belongs to the white oak group.

## New Construction Methods for Housing in England

VARIETY OF NEW MATERIAL AND TYPES OF CONSTRUCTION ARE NOW BEING USED BECAUSE OF POST-WAR CONDITIONS

By John Y. Dunlop, of Glasgow, Scotland

FOR ages the construction of houses in Britain was carried out by brick and stone, but now that we are faced with great labor difficulties and the increased cost of labor the English Government is doing everything possible to bring about a radical change in home construction methods and material.

The typical brick house in this country is built with a wall thick enough to support weight of the floor and roof. Most building laws at one time demanded that the minimum thickness should not be less than 14 inches.

With stone houses the usual thickness of the wall for a small house was 20 inches. Since both of these materials were built into solid walls all external walls in those houses had to be strapped, lathed and plastered on the inside.

Now every endeavor is being made to get material which will reduce the amount of skilled labor in preparing it and also in erecting it. With this aim in view many experiments have been carried out by the Minister of Health Department of Scientific and Industrial research.

### Brick Construction

Building solid walls with bricks throughout the full thickness is no longer possible because the cost is too great. Hollow bricks not less than 6 inches thick with skins and stiffening webs 1 inch thick are being used in their stead.

These hollow bricks are used for partition walls down to 3 inches thick and are prepared with webs and stiffeners as in the case of hollow bricks for external walls.

The advantage of this type of brick fabric is that the material will be lighter for transport and handling and economical material and fuel in manufacturing.

Composite walls partly built of brick and partly of concrete blocks are to be largely employed. The inner part of the wall is to be brick  $4\frac{1}{2}$  inches thick, the outer part to be of thin concrete slabs with a proper cavity and wall ties between the two thicknesses. The outer part may also be of brick and the inner concrete.

The department also recommends the use of the composite or three-ply wall, the outer part of which

will be built of brick  $4\frac{1}{2}$  inches thick, the inner part of concrete slabs having a space of not less than 1 inch between which would be filled up with a stiff cement mortar grout.

External walls of cottages of one story are to be built of brickwork  $4\frac{1}{2}$  inches thick if protected from the weather by rough cast material rendering or other waterproofing material on account of the high thermal co-efficient which such a wall possesses.

### Chalk Bricks

Chalk is one of the materials, which gives great promise as a new building material. For outside work experiments have shown that chalk brick made from six parts of chalk to one part of cementitious material gives very good results.

For inside work and external work where the house fabric is covered with stucco as a protection against our atmospheric conditions the composition of about 15 parts chalk to one of cementitious material has proved satisfactory.

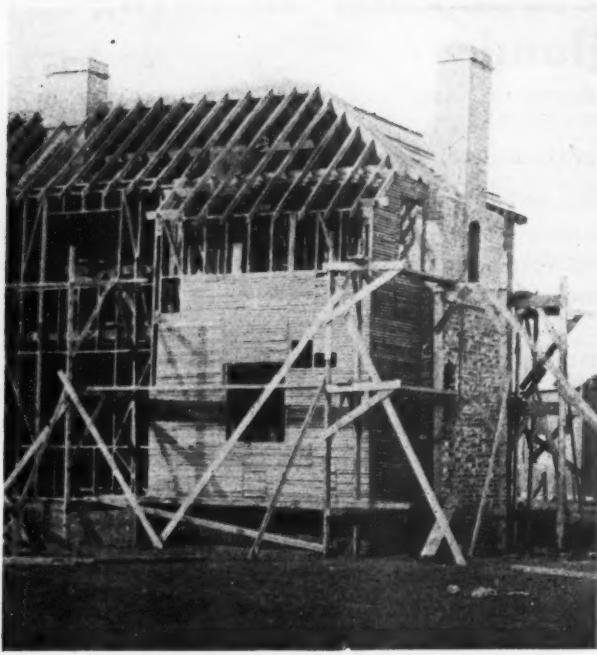
In making bricks of this material no fuel is required except such as is necessary for power and for the cementitious material. It has been found that chalk containing from 18 per cent to 20 per cent of moisture produce the best shaped brick.

Chalk bricks are laid in much the same way as clay brick and are bedded and jointed in mortar; meantime, they are only being used as facing bricks for three-ply walls or where the wall is of brick and concrete. Where it is desired to dispense with the making of bricks chalk concrete is being used.

This material is made of crushed chalk mixed with



Back View of Foursome Brick House. The Two Tenants on Ground Floor Use Front and Back Doors, While the Tenants for the Upper Floor Enter by the Door in the Ends of the House.



**Timber Framed House in England, Showing How the Chimney Stacks Are Arranged. These Timber Houses Are Built on Concrete Foundations and Contain Three and Four Apartments.**

cement on a proper mixing board in the proportions of 7 to 1 and filled in between the boarding in a semi-fluid state.

Lintels to doors and window openings are cast in position in chalk concrete in a proportion of 4 to 1 of cement. The work when finished is covered with a coat of cement rough cast. In monolithic work of this sort natural ground, lime can be used in place of cement.

#### Rammed or Molded Materials

Building in this way is really nothing new in England. It was used a century ago but fell into disuse sometime ago. Recent investigation has shown the present to be the most satisfactory time for its revival.

Walls for domestic house construction all formed

by ramming dry natural soil between movable shuttering forming a temporary mold.

The essential qualification for this work may be defined as a firm coherence of the constituent particles when rammed and dried combined with an absence of excessive shrinkage in the process of drying.

Pure clay would satisfy the former condition and pure sand or gravel, the latter yet neither by itself could possibly be used for this form of construction.

Ordinary earth is a complex mixture in which clay and sand are by no means the only constituents and may of them possess the essential qualities. Calcium carbonate occurring in chalk mark or disintegrated limestone help to reduce shrinkage, while distracting little from the cementitious properties of the other ingredients present. An all important point is the water present in the earth at the time of actual use and it is generally found that the water present should be between 7 per cent and 14 per cent of the weight of the dried earth. A clay-gravel-sand gives the best results with as much as 15 per cent of water, while a chalk loam mixture with 13 per cent of water shrinks excessive on drying. A house of this kind requires to be built on a good brick or concrete foundation and the rammed pise should be begun at 9 inches to 12 inches above the ground level.

#### Cement Concrete

Previous to 1914, houses in England were built with concrete blocks, these blocks usually solid, the inner side of the wall was treated in the same way as a stone wall. The new proposals which are being put before the building trades are the building of concrete slabs, forming a cavity wall. The making and building of cavity concrete blocks the full thickness of the wall and the building of concrete walls in situ.

The difficulty in building walls with large slabs is to prevent moisture from percolating the outer part of the wall to the inner part thru the vertical and bedding joints. Investigation has shown that surface waterproofing does not prove satisfactory where there are return ends to the slabs which come in contact with the inner thickness of the wall and that walls built with plain slabs and a continuous cavity offer a better resistance to the weather than blocks of the full thickness of the wall.

However, building with slabs is becoming very popular in several parts of England and the usual construction is to erect a wood framed house on which the floors and roofs are carried and have the

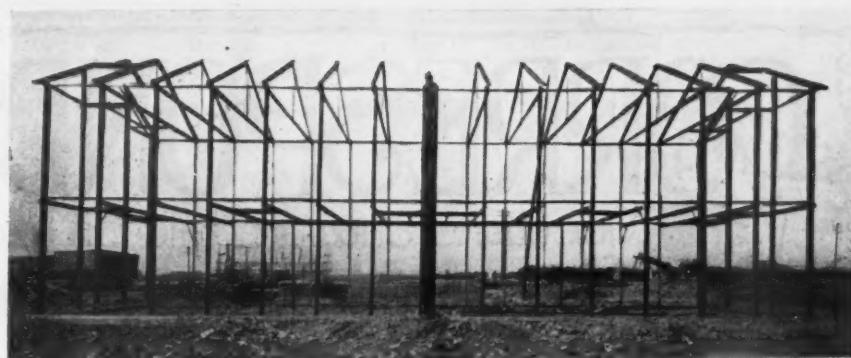


**Concrete Houses Built with Blocks and Coated on Outside with Stucco. Concrete as a Building Material Is Now Used Extensively in Great Britain.**

concrete slabs fitted in between the framing with the whole fabric covered on the outside with cement stucco. One company in place of using concrete slabs are building houses with timber framing and slate slabs.

Most of the builders in this country, however, have come to the conclusion that where suitable aggregate is available on or near the site monolithic concrete construction will prove more expeditious and economical than block or slab construction.

Monolithic concrete construction is being erected in three distinct formations and those comprise plain solid walls, walls with a vertical damp-proof course, and walls with caities both interrupted and continuous. The minimum thickness of solid walls for bungalow con-



Steel Framed House, Showing Steel Framing for Walls and Roof. The Upright Frames Are T-Irons, the Roof Angle Irons. The End Gables Are Trimmed for Brick Chimneys.

up half a hundred houses under the National Housing scheme have started off by fixing contracts for a few of each kind with the hope that they may discover something new in fabric construction.

Of course, you must understand that a timber framed house is something entirely new in England and if you had gone forward with the idea to any of the building authorities previous to 1914 they would have thought you crazy. However, this type of house is now being given a good trial in this country and from the various returns of the cost to hand, timber framed construction is going to reduce the cost somewhat.

Various proposals for the construction of steel framed houses have been before the building world in England for some time. The three illustrations show the progress of semi-detached house and its completion. The upright frames which are on a concrete base are



Steel Framing Covered with Metal Lath and Ready to Receive Stucco Covering. The Roof Is Boarded with Sheathing. The Partitions in This House Are Made of Cement Slabs.

struction is fixed at 4 inches. Walls, however, of this thickness are very doubtful. Altho there may be no question as to their stability they are very liable to conduct dampness and moreover the thermal coefficient of a thin concrete wall is not sufficient to maintain an equal temperature within the house.

#### Timber Framed Houses

Timber framed houses are being erected all over England at the present time. They are of two kinds, the temporary bungalow, which is being erected by thousands in every county to relieve the housing situation, and permanent houses. The houses are generally put up in sections on a concrete foundation and contain three, and four apartments, with bath room and sanitary fittings.

The permanent timber framed house is built on the same lines as the brick or cement house. Many of our community who are putting

T irons, while the roof is made up of angle irons. The framing of this structure is riveted together. The end gables and the middle gables are trimmed for brick chimneys. On the top of the angle irons of the roof wood laths are placed, a nailing base for the roof boards. The roof boarding is laid horizontal.



Steel Framed House Finished and Ready for Occupancy. This Is the So-called Semi-Detached House, Containing Four Apartments. The Floors Are Concrete with Oak Covering.



### Question on Preserving Shingles

To the Editor:

Holyoke, Colo.

I am contemplating putting a new roof on a house and would be pleased if you would give me some advice.

I will put on 5 to 2-inch red cedar shingles and I want to dip them in a green paint or shingle stain. I have an idea that the paint would be the best and that the stain has but little preservative qualities.

Please give me some advice as to this.

I am to dip the shingles in the paint and then lay them. Is this O. K.?

H. SUTHERLAND.



### Blackboard Needs Repair

To the Editor:

Middletown, Ill.

I would like to know if any readers of the AMERICAN BUILDER have found a successful method to repair a small hole in a slate blackboard. I recently put in some new blackboards and one section had a nail pushed thru the slate in shipping.

The hole is small on the back side, but is splintered off on the face of the board, making a hole about one and one-half inches by two inches.

I used scraped slate and liquid glue, which appeared to make a satisfactory job, but the glue would not stand the dampness from washing the blackboard. I would like to know if there is a glue that will stand the dampness.

SAMUEL MORRIS.

P. S.—I used Le Page's glue.

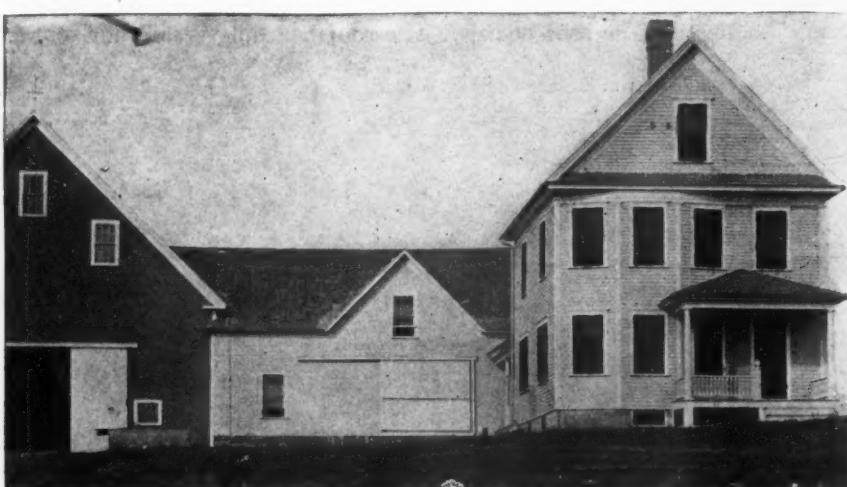


### Modern Farm Buildings in Maine

To the Editor:

Easton, Maine.

I am sending you a picture of one of several farm buildings that I have built in the past few years and would be pleased



Home and Barn Built for S. J. Hanson by A. L. Wing, Contractor, Easton, Maine. Both Home and Barn Are Equipped with Running Water and Electric Light and the House Has Modern Plumbing and Heating Fixtures. The House Is 24 by 28, Ell 16 by 26, and Barn 45 by 90 Feet.

to see it in the AMERICAN BUILDER, of which I have been a reader for seven or eight years. It has been a great help to me in my work. These farm buildings are the home of S. J. Hanson. They have the latest plumbing, heating, electric lighting and running water in house and barn. The main house is 24x28 feet, the ell 16x26 feet, shed 20x40 feet and barn 45x90 feet. The cost was approximately \$15,000.

A. L. WING.



### He Wants to Get Soft Water

To the Editor:

Sully, Iowa.

In digging a cistern, is there any way of getting soft water immediately? Does it make any difference whether the roof of my house is painted or not?

PETER ROZENDAOL.



### Excellent Advice On Labor Estimating

To the Editor:

Cragsmoor, Ulster Co., N. Y.

Mr. Harry L. Porroher, in the January issue, asks light on labor estimating.

I do not believe that a table of the time required for the different operations in building would be of much real use to Mr. Porroher unless gotten together by someone in his own section of the country. I have such tables here in my library and seldom make use of them for labor estimates.

I find, for instance, in one table that 1,000 brick laid in lime mortar will require 7 hours mason's time and 7 hours helper's time and a little further on in the same book is given the same labor estimate for laying 1,000 brick in cement mortar. Now any mason knows that it takes longer to lay brick in cement mortar than it does to lay them in lime mortar and do the same quality of work, yet no mention is made of the lime-laid brick being more carefully laid.

Mr. Thos. R. Preece, first vice-president of the masons union at Chicago, states that on large work and in cities, brick masons will average 1,500 brick per day, including facing and backing. Personally, I am sure that many jobs in Chicago average better even than that.

Now I don't believe the Chicago masons are very much better than some of the local masons right here in my own county and yet we don't average much over 800 bricks per mason here. Our architects won't stand for the kind of work that can be laid at the rate of 1,500 per day. We are required to fill every end joint and every vertical space thoroughly. Stretcher courses must start with  $\frac{3}{4}$  bats and header courses must break joints with stretchers. Nearly all our walls are outside as we usually have

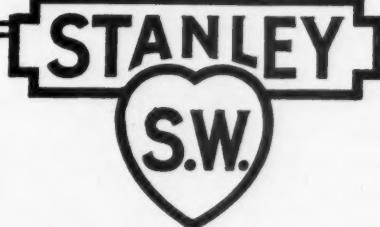
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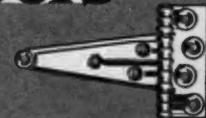
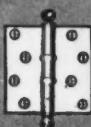
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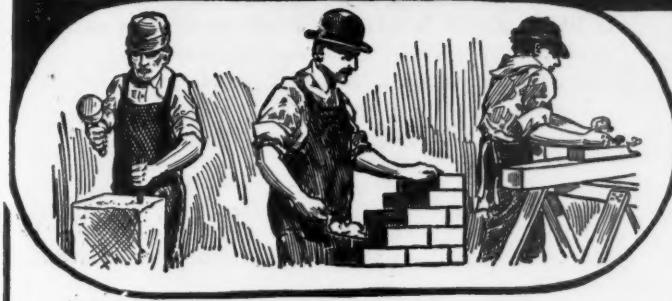
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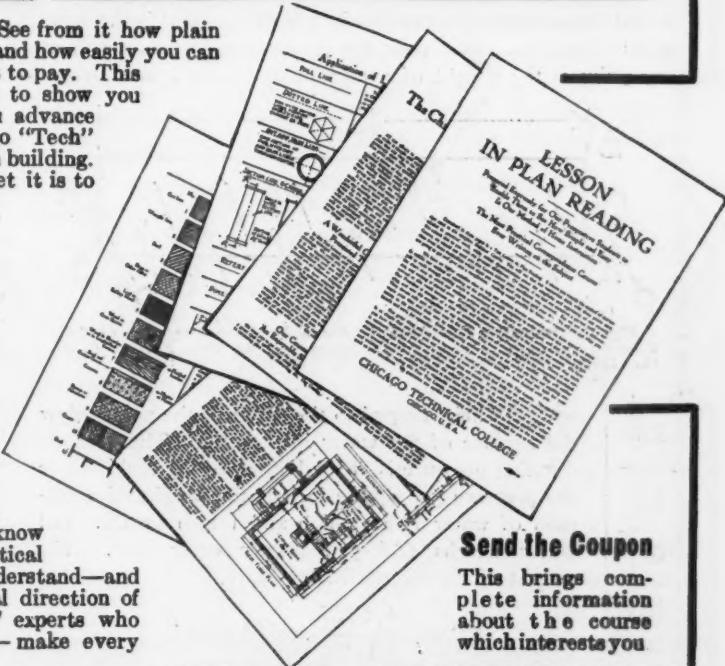
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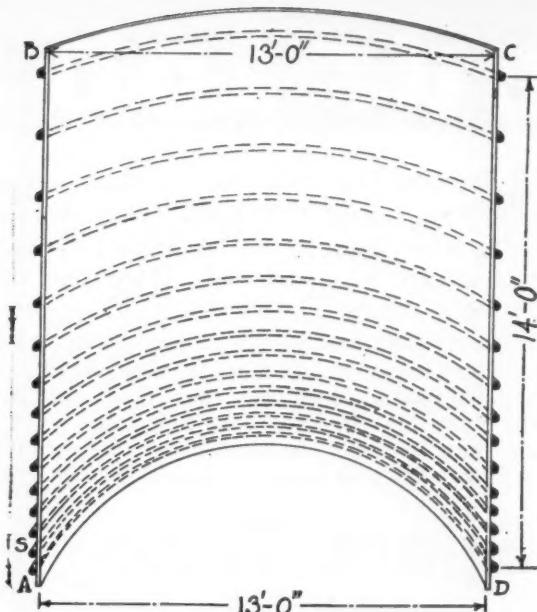


Fig. 1. Showing One-Half of the Tank and the Hoops.

## Number of Hoops for Water Tank

To the Editor:

Atkinson, Ill.  
Can you help a subscriber of long standing out on a job I have here? I have built a supply tank for a customer, the tank being 13 feet in diameter and 14 feet high, hooped with  $\frac{5}{8}$ -inch round iron hoops. How many hoops are necessary to hold the tank safely when full of water, the staves being made of 2-inch fir lumber?

OWEN NICKERSON.

**Answer**—One of the fundamental principles of hydraulics is that the pressure at any point in a body of water is the same in all directions. In a tank the pressure per square inch at any point is the weight of a column of water, 1 inch square

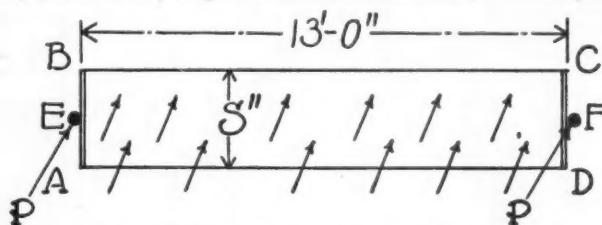


Fig. 2. Showing the Area Under a Uniform Pressure of 6.08 Pounds Per Square Inch to Be Supported by Two Forces, P, of the Hoop.

and of a height equal to the depth of the point below the surface of the water in the tank. The greatest bursting pressure is at the bottom of the tank. Here the pressure per square inch is the weight of a column of water 14 feet high and 1 inch square. But water weighs 62.5 pounds per cubic foot. The weight of the column is, therefore,

$$P = \frac{14 \times 62.5}{144} = 6.08 \text{ pounds}$$

Now each hoop must support a portion of the tank which is represented in height by S. The water presses against the curved surface at right angles to the surface. The greatest strain on the hoop is at a section thru the center of the hoop as shown in Fig. 1. The force that each hoop must sustain is the pressure of 6.08 pounds per square inch on a rectangle S inches high and 13 feet wide, shown in Fig. 2. This rectangle is the projection of the curved surface S inches high onto a vertical plane thru the axis of the tank.

Now the pressure on the rectangle is

$$6.08 \times S \times 13 \times 12$$

Fig. 3  
Showing  
spaces  
between  
hoops in  
inches

But this must be supported by the fibre stress across the hoop sections at E and F. The area of the hoop is

$$\frac{3.1416}{4} \left( \frac{5}{8} \right)^2 = .308 \text{ square inch}$$

If 10,000 pounds is taken as a safe stress then each section will hold:  $10,000 \times .308 = 3,080$  pounds

The two sections will hold 6,160 pounds.

The two forces are equal, or

$$6.08 \times 13 \times 12 \times S = 6,160 \text{ pounds}$$

$$S = \frac{6,160}{950} = 6.5 \text{ inches}$$

Then at the bottom the hoops must be spaced 6.5 inches apart. At a depth of 10 feet the pressure per square inch is

$$P = \frac{10 \times 62.5}{144} = 4.34 \text{ pounds per square inch}$$

Then  $4.34 \times 13 \times 12 \times S = 6,160$ .

$$S = \frac{6,160}{677} = 9 \text{ inches}$$

That is, the hoops should be spaced 9 inches at a depth of 10 feet.

At a depth of 5 feet:

$$P = \frac{5 \times 62.5}{144} = 2.37 \text{ pounds per square inch}$$

Then  $2.37 \times 13 \times 12 \times S = 6,160$ .

$$S = \frac{6,160}{337.5} = 18 \text{ inches}$$

The hoops should be spaced 18 inches at a depth of 5 feet.

To be exact, one should determine the spacing for every foot of depth. But for 5, 10 and 14-foot depths the spacing can be estimated near enough for practical purposes.

The tank with hoops spaced is shown in Fig. 3. It requires fifteen for a safe design as shown.

PROF. CHAS. W. LEIGH,  
Armour Institute of Technology, Chicago, Ill.



## Solve This Bevel Problem

To the Editor:

Longmont, Colo.

I am enclosing a pencil sketch of a diamond spout as made in a flour mill. I would like to know the simplest way to find the bevel of the filler at c c c c and the pitch of the diamond spout as used in millwright work. It is a very easy matter to get the bevels at A A and B B, but I want some simple and reliable way of getting the bevels at c c.

Mr. Nowels Wants to Find Bevel of Fillers  
of This Diamond Spout at c c c c.

## Wants to Sharpen Hand Scraper

To the Editor:

Passaic, N. J.

I have been a reader of your paper for ten years and have found it a great help to me in the building line.

I would like to ask someone with experience to give me some information in regard to sharpening a hand scraper with square edge and also bevel edge with the right bevel.

JOHN DE VRIES.

Fig. 3  
Showing  
spaces  
between  
hoops in  
inches

and of a height equal to the depth of the point below the surface of the water in the tank. The greatest bursting pressure is at the bottom of the tank. Here the pressure per square inch is the weight of a column of water 14 feet high and 1 inch square. But water weighs 62.5 pounds per cubic foot. The weight of the column is, therefore,

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Now the pressure on the rectangle is

$$6.08 \times S \times 13 \times 12$$



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THE SATURDAY EVENING POST

65

ROOFING—  
Blasted from Rock!

Who actually examine Johns-Manville Asbestos Roofing for the first time find it hard to believe that such a thin sheet is really stone, blasted out like marble or granite. Yet this remarkable characteristic of Asbestos is unique, because, in addition to its use as roofing, it is the only all-mineral roofing felt. It is also the only all-mineral roofing which can be applied in less time than in roofing history.

When you see  
"Johns-Manville"

WHEN you see "Johns-Manville" on a roll of roofing, you know it is a roofing in which you can put confidence. You have the advantage of using an article which has become favorably known to owners all over the country, through long continued advertising in such publications as The Saturday Evening Post, Country Gentleman, Collier's, Leslie's and Literary Digest.

They know that Johns-Manville Asbestos Roofing is fire-safe; that it will neither dry up, decay, nor disintegrate; that it is unaffected by rain, sun, snow or sleet, and that it should last as long as the building it covers.

When you lay a Johns-Manville roofing, you set up a lasting advertisement of your ability and judgment.

Write the nearest branch for full details.

*Johns-Manville Asbestos Roofings are approved by the Underwriters' Laboratories, Inc.*

JOHNS-MANVILLE, Inc., Madison Ave., at 41st St., New York City  
Branches in 64 Large Cities  
For Canada: CANADIAN JOHNS-MANVILLE CO., Ltd., Toronto

COVERS THE CONTINENT  
Through—  
**Asbestos**  
and its allied products  
JOHNS-MANVILLE  
Serves in Conservation  
Heat Insulations, High  
Temperature Cements,  
Asbestos Roofings,  
Packings, Brake  
Linings, Fire  
Prevention  
Products

**JOHNS-MANVILLE**  
**ASBESTOS ROOFING**

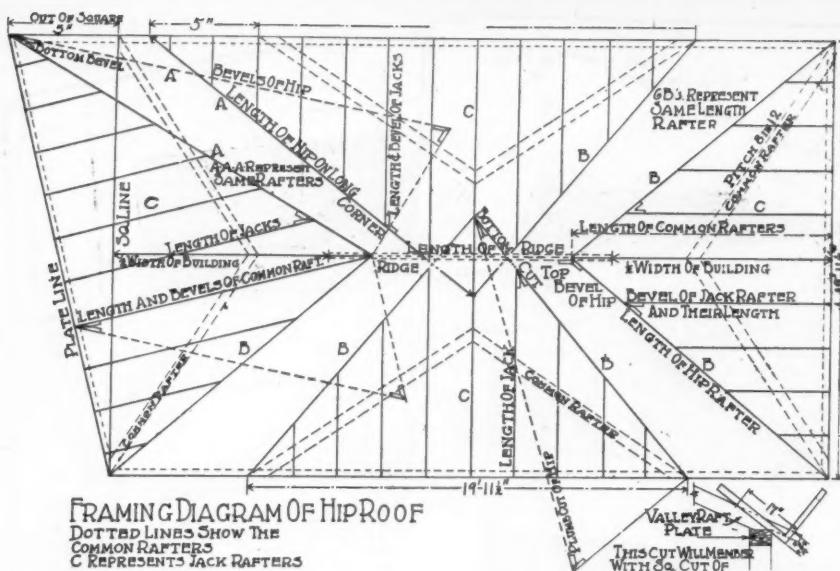


Diagram of Irregular Hip Roof Showing Framing Details. Mr. Welliver Also Tells How to Find the Cut of the Valley Rafter.

### Tells How to Find Rafter Cuts

To the Editor:

Danville, Pa.

Mr. B. C. of Canada wants to know how to get the cut of a valley rafter, so here is a plan of hip roof 5 feet out of square showing four sides on same plan, and also plan of cut of valley to member a square cut on main rafter.

JAMES F. WELLIVER.

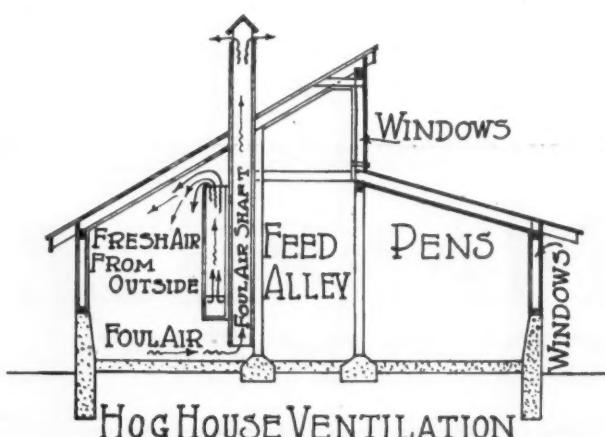
### Something Wrong With Hog House Ventilation

To the Editor:

Skidmore, Mo.

I have a saw tooth shaped hog house. It is 80 ft. by 20 ft. wide, has a 4-foot alley and 13 pens on each side with windows on the south side both at top and bottom. When the shed is full of hogs a layer of foul air stays near the floor. As the pigs are farrowed they become dizzy and ill and die in a few days if left in the shade. I like to keep the hot air in, as it stays at the top of the shed, but when the windows are open at the top all the hot air goes out and leaves this foul air on the floor and the floors are damp.

I have a flue built at each end of the hoghouse, coming within six inches of the floor and going out at the top of the roof. The size of the flues are 6 by 12 inches. These flues take out part of the bad air, but very little of it. The house has an intake the same size as the flue entering at the bottom of the shed outside and coming out on the



Cross-Section Drawing of Hog House Built by Elmer Reese, Skidmore, Mo. Under the Present Arrangement the Ventilation System Does Not Work Effectively. What Would You Suggest?

inside about two feet from the ceiling, as shown in the sketch.

I would like to get some suggestions as to how this trouble can be remedied.

ELMER REESE.

### How He Solves Goodale's Puzzles

To the Editor: Jacksonville, Ill.

My solution of F. C. Goodale's "Puzzlers" in December issue of AMERICAN BUILDER, is as follows:

1. Whiteoak board 40'-0" long, 9 in. wide, 1 in. thick; 30 board feet of lumber; walnut board, 20'-0" long, 12 in. wide, 1½ in. thick, 30 board feet of lumber; maple board, 30'-0" long, 6 in. wide, 2 in. thick, 30' board feet of lumber.

2. Room 6'-0" by 6'-0" by 6'-0" = 216 cu. ft. Sides of room 6'-0" by 6'-0" including ceiling and floor or six

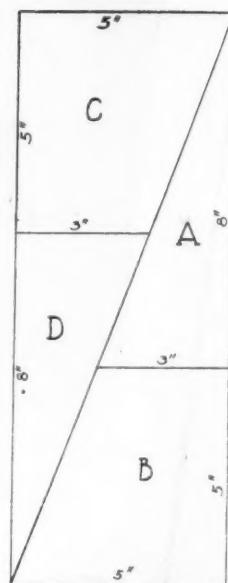
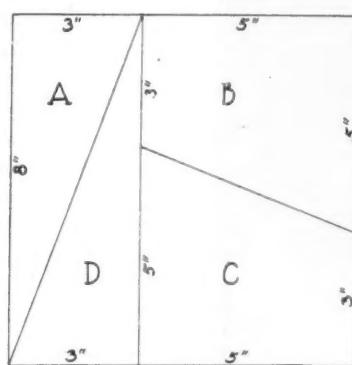
sides in all covered with lumber 1 inch thick, will require 216 board feet of lumber.

D. C. CARSON.

### Here's a Hard One to Crack

To the Editor: Herreid, S. D.

A board 8 inches square is cut as shown in left sketch and the parts are placed together as shown in right sketch. The board, 8 inches square, contains 64 square inches, but when rearranged as in sketch No. 2 we produce from the 8-inch square



Conundrum de Luxe. By Sawing a Board a Certain Way You Can Increase Its Area from 64 Square Inches to 65. How Do You Explain It?

board one 5 by 13 inches and we then have 65 square inches. Will some one explain where this square inch is gained in the re-arrangement?

F. C. DRUMMOND.

### Excluding Sun Glare

AMBER colored glasses are often used to protect the eyes from glare of the sun.

Curtains are frequently drawn in homes, offices and factories to exclude the direct glare of sun from rooms in which people may be reading or working. Sometimes this necessitates turning on artificial light in the room. What really is needed in cases like this is not light exclusion but control or modification of light.

Instead of a curtain have a frame that fits over the window. Fill the frame with amber colored glass or amber colored pyroxylin sheeting. This permits the light to go thru, but modifies it so that there is no blinding glare.



## If Your Time is Worth \$1 an Hour or More— By All Means Get This Book

*Second Edition Revised and Improved*

**The approaching era is one  
of BRICK Construction—  
Are You Prepared?**

How many brick does that house need?  
How many brick will a bricklayer lay in a day?  
How much cement and lime are required for  
mortar to lay 1000 bricks?  
How many hours' time is required to fix it?  
How is a window frame set in a brick wall?  
This book tells you all these things and  
many more. It is, a complete manual  
of information on solid brick residence  
construction. It goes into detail and  
shows, step by step, how to figure  
brick costs.

The second edition contains  
complete estimating tables so that  
the number of brick, amount  
of material for mortar of any  
mixture, hours of bricklayers'  
and laborers' time may be read  
off for any thickness and area of wall  
up to 10,000 square feet laid in any bond.

### 6 Full Page Architectural Detail Drawings

Several thousands of these books are now in the hands of contractors and builders. Small contractors, big construction companies and architects have written to express their appreciation of this book. We are so sure you will like the book and will find it so necessary to your business that we will send it on approval. Just attach coupon to your business card or letterhead and you will get the book by return mail together with a bill for 25c; and you may either send the money or return the book.

With every building operation it pays to consult an architect or engineer. Ask them about brick—they'll tell you.

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LOOK FOR THIS MARK  
ON EVERY BRICK

Gentlemen:—Please send me "Brick, How to Build and Estimate" as offered in the March issue of the American Builder. Enclosed find 25 cents in stamps.

We are planning on erecting:

.....

Name \_\_\_\_\_ Business \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_

## Large Rooms in Small Compass

BRICK HOUSE GOOD EXAMPLE OF COMPACTNESS OF DESIGN AND SIZE OF ROOMS—  
REASONABLE IN COST

THE old-fashioned five or six-room house, with its wasteful, rambling plan, is quite out of the financial reach of the average man at present building costs. What is the builder to do? The public still demands a house with the same number of rooms. Six rooms are absolutely essential for an average family, and they must be of fairly good size. The house here illustrated shows how the problem was solved by the architect, who built this house for his own use. In an area of only 22 feet 8 inches by 25 feet 8 inches is arranged a living room 12 feet wide by 17 feet 6 inches long, a dining room 12 feet 6 inches by 11 feet 6 inches, an ample kitchen, three good bedrooms—two of them containing two closets apiece—a bathroom and a big roomy attic. By the elimination of all waste space the same accommodation is provided as in many a house half as large again. The architect believes that the development of small plans of this kind is the key to the present building situation.

This house is built of brick. The architect states that he selected the material because he wanted a permanent home of first-class material, with fire resistive walls that would save him money on fire insurance premiums on the building and contents, and that would give him a house

that is warm in winter and cool in summer.

The exterior is quite attractive with a large front porch extending the full width of the house. This porch can be screened in very easily during the warm weather and will make a very comfortable sun porch. Broad shutters on the upper front windows add a



First and Second Floor Plans of Efficiently Designed Brick Home. It Contains Six Large Rooms.

touch of picturesqueness that is pleasing and distinctive. The roof is gable-shaped with the walls above the eaves in stucco. In case extra space is needed, the large high attic can very cheaply be converted into living or sleeping rooms. The house is 25 feet 8 inches by 22 feet 8 inches.

A wide variety, of course, and bonds have been used in the front facade of this house with decided effect.



### Nail Problem Solution

To the Editor: Minneota, Minn.

In answer to P. W. Rinehardt's nail problem: He did not say what kind of nails to use, so I have selected the 8d size, which, I think, he will find as suitable as any.

|         |       |   |     |   |       |
|---------|-------|---|-----|---|-------|
| A drove | 1,801 | + | 592 | = | 2,393 |
| B drove | 1,440 | + | 592 | = | 2,032 |
| C drove | 1,152 | + | 592 | = | 1,744 |
| D drove | 902   | + | 592 | = | 1,494 |
| E drove | 742   | + | 592 | = | 1,334 |

6,037

8,997

3 remaining

9,009

As there are 2,963 nails left in keg, which makes 9,000 in a 100-pound keg,  $2,963 \text{ nails} \div A B C D E = 592 \text{ nails}$  each, with a remainder of 3 nails.

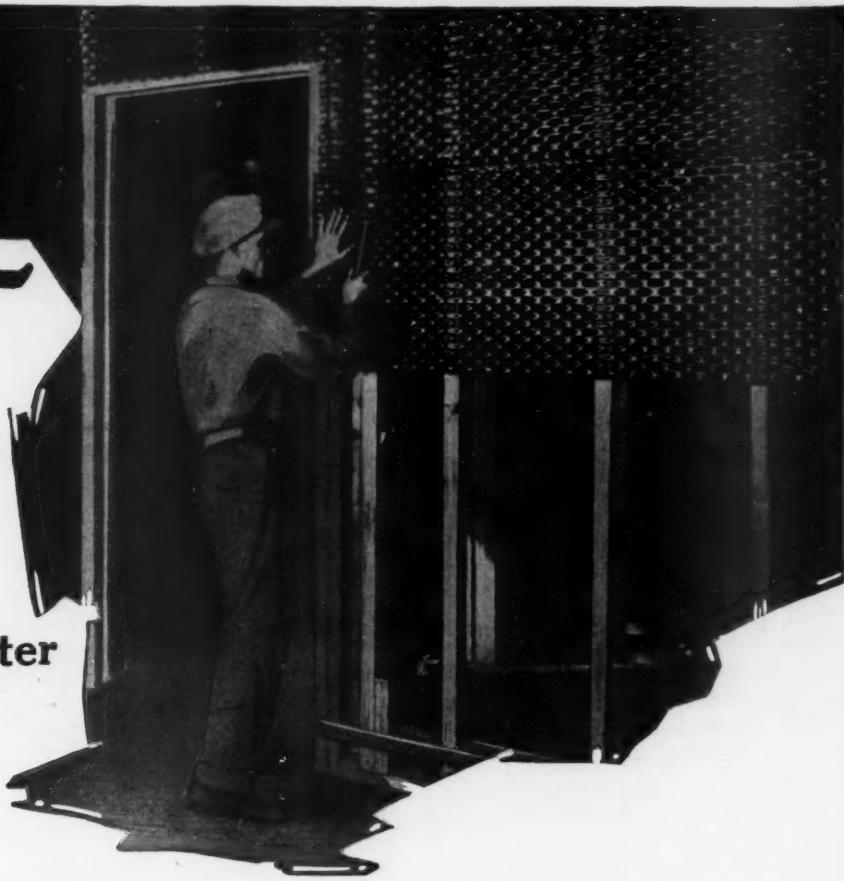
L. A. R.



Brick House Designed to Satisfy Popular Demand for Economy in Construction, Without Cutting the Size or Comfort of the Rooms. All Waste Has Been Eliminated. W. Carver, Architect, Cleveland, Ohio, Drew Up the Plans.

# saves —

- Lath
- Time
- Studding
- Labor Cost
- Waste of Plaster



**S**OME contractors and builders—a very few, be it said—have been hesitant about using metal lath in the small house because of an economic myth they have set up in their minds, i. e., the belief that it costs more.

Where Bostwick "TRUSS-LOOP" Metal Lath is used, with the construction economies it permits, the *finished wall* cost is no greater than where ordinary wood lath is used—only  $2\frac{1}{2}$  or 3 per cent of the total cost of the house (in fact, only *one per cent* where "TRUSS-LOOP" is used only at the points most vulnerable to fire).

The five savings shown above (not to mention the subsequent saving to the home owner in upkeep) practically offset the higher first cost of Bostwick "TRUSS-LOOP".

Let us send you a desk sample and show you in detail how the above savings in Lath, Time, Studding, Labor Cost and Plaster are effected.

**THE BOSTWICK STEEL LATH COMPANY**  
NILES, OHIO

*Bostwick*  
TRUSS-LOOP  
METAL LATH



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



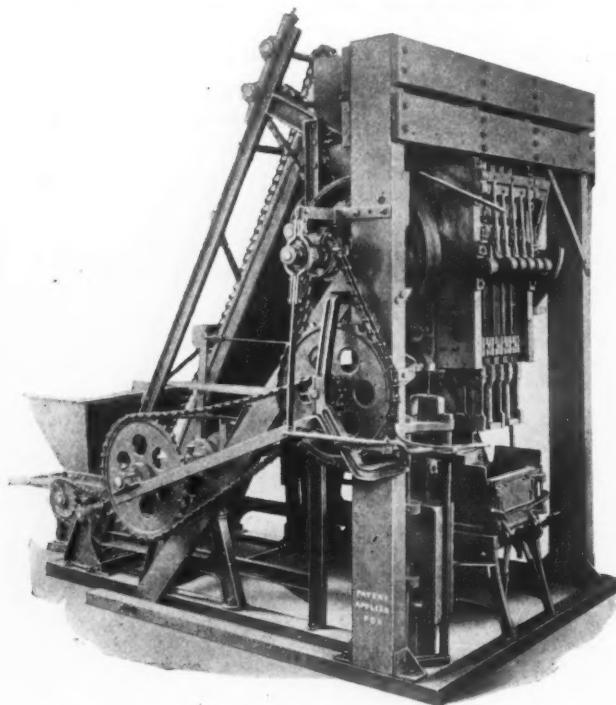
**EDITOR'S NOTE:** The American Builder does not accept payment in any form for what appears in our reading pages. In order to avoid any appearance of doing so, we omit the name of the maker or seller of any article we describe. This information is, however, kept on file and will be mailed to anyone interested; address American Builder Information Exchange, 1827 Prairie Ave., Chicago.

### Complete Automatic Block Producing Machine

COMBINING the various operations required in the making of concrete block has been the feat achieved by a manufacturer who recently placed a complete automatic concrete block-producing machine on the market. It is built up from the original hand machine and has equipment consisting of a block machine, power tamper, scraper and finisher, core actuator, conveyor and feeder and a new automatic cam attachment.

The old equipment required twenty-three manual and pedal operations for the production of a block. By means of this new cam attachment, these twenty-three motions are reduced to one single motion, that of pulling the starting lever. The machine then automatically feeds in the material and produces a block in 12 seconds, and then stops. Then as the block is removed another pallet is placed in the machine, the lever is again pulled, producing another block in the same time.

This method of building up an automatic machine has an advantage in that it makes possible for the owner of a hand machine to obtain an automatic machine without sacri-



Complete Automatic Concrete Block Producing Machine. It consists of Block Machine, Power Tamper, Scraper and Finisher, Core Actuator, Conveyor and Feeder, and Automatic Cam Attachment. The Machine Automatically Feeds the Material for the Block.

ficing his old equipment. He can build up from this original unit. The plant as it stands complete is shown in the illustration.

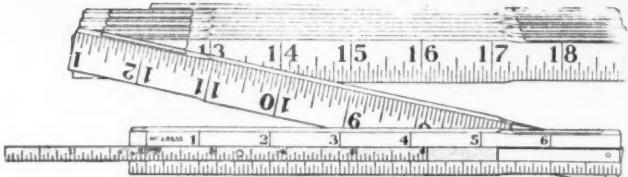


### Extension Rule for Inside Measurement of Openings

A NEW 6-foot extension spring joint rule, particularly designed for taking inside measurements of openings, such as door and window frames and similar fixed points, but just as handy as a common rule for ordinary measuring, has just been put on the market. While somewhat similar in pattern to a spring joint rule, it is made of genuine boxwood in natural finish.

The first section of the rule is fitted with a graduated brass slide, which extends readily but is not loose and cannot fall out, having end lock. To take an inside measurement, open

the rule to within 6 inches, or less, of the distance between the points. Extend the brass slide by push button. Add the measurement on the brass slide to that shown at extreme end of rule, which gives the exact distance. The extension slide is also admirably adapted to determining depth of mortises, etc. The boxwood sections are somewhat heavier than those



Extension Rule for Inside Measurements of Openings. The Sketch Above Shows How the Rule Is Used in Measuring Window Frames.

of a common spring joint and are securely fastened at joints, making the rule more rigid when extended than the ordinary folding rule. The graduation is consecutive inches and sixteenths, both sides, with distinct lines and figures.

This rule, fully and conveniently taking the place of a common rule, and having in addition the extension feature, will appeal to carpenters, architects, inspectors, and contractors.



### Machine Makes Concrete Blocks Without Tamping

DEVELOPMENTS in the concrete block manufacturing industry have come along rapidly in the last few years and one of the most interesting features in the manufacture of this building product is the perfection of a new machine that makes blocks without a tamper.

This machine has a production of six 8 by 8 by 16-inch wet mix blocks per minute, the blocks being either plain, rock faced, or any other design desired. Simple adjustments in the machine enable the operator to change molds quickly. By the arrangement of this machine the same pressure is applied to each block and traveling is unnecessary.

The mixed material is fed into a hopper in the rear by means of a continuous mixer with a capacity of 7 cubic yards an hour. The material is measured by a device at the bottom of the hopper, this device being operated by a cam which during the up stroke of the machine draws a series of prongs thru the material cutting off material above until the charge has been released and the bottom door automatically locked. During the down-stroke of the machine



*When it  
comes to  
Cottage  
Windows*

FOR the cottage the builder requires window frames which are right in style, and reasonable in price. Andersen standard white pine frames meet these requirements by combining quality and appearance with economy.

### A True Economy

In Andersen Frames you will find a means of cutting building costs while furnishing frames of highest quality. They are ready whenever you need them; your work is not delayed. Every frame is fitted at the factory so that it can be set up in ten minutes, thereby saving labor. All exposed parts are of *Genuine White Pine*. In the manufacture of these frames the lumber is cut in the most economical way possible—you pay for no waste lumber. Contrast these features with the waste incurred where the frames are made to order or built on the job.

### A Free Book For Builders

Write for our illustrated book for builders showing how Andersen window and door frames cut building costs. A copy will be sent free upon request.

**Andersen Lumber Company**

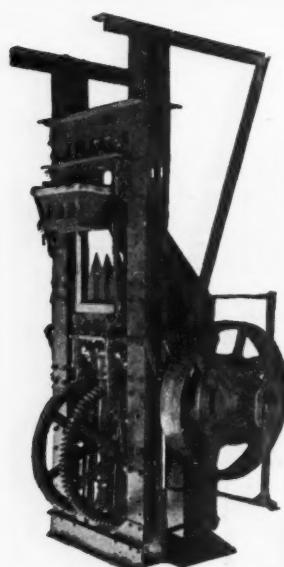
*Frame Manufacturers*

Dept. A-3

South Stillwater, Minn.



**Andersen**  
**FRAMES**



New Concrete Block Machine Which Operates Without Tamping. Complete Cycle Requires Ten Seconds.

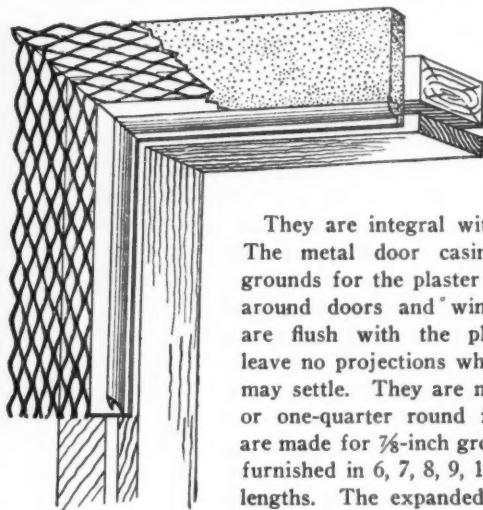
the prongs are drawn back, allowing material to fill the measuring device again.

A pull at a lever in the front of the machine allows the measured material to enter the mold box, then the clutch is thrown in by means of another lever just above. The ram makes one complete revolution, the power stroke driving the plungers thru the mass of concrete, followed up by the stripper plate, thus creating a pressure in all directions. The return stroke strips the finished blocks from both the plungers and mold box into position to be carried away as shown in the illustration. The complete cycle requires ten seconds.



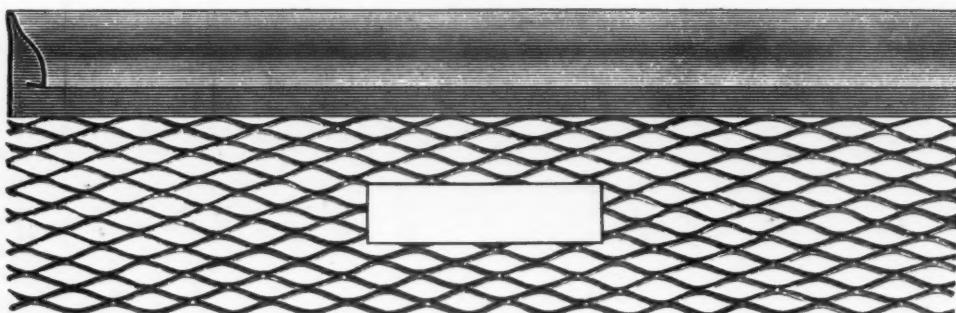
### Expanded Metal Wings for Door Casings

TO avoid cracks which commonly occur in the plastering around door casings, a new and unique feature in the form of expanded metal wings or webs has been devised and is now on the market. These wings provide a tie with the adjoining wall around door casings and reinforce the plaster at its weakest point in such construction.



Expanded Metal Wings to Prevent Cracks in Plastering Around Casings.

tion. The smaller picture shows how the wings are applied.



Showing How Metal Wings Are Attached to Casings. These Casings Are Made in Various Lengths.

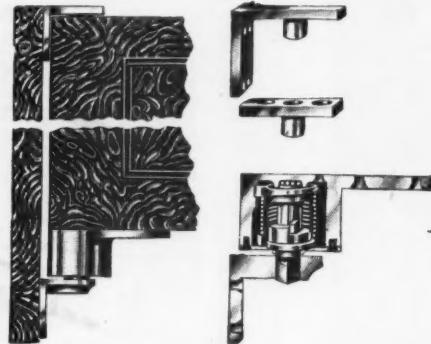
### Gate Springs That Do Not Sag

IN many cases gates sag because children have used them for makeshift merry-go-rounds, but in most cases they sag because of their own weight and because of the weakness of hinges. To offset this undesirable feature, a new gate hinge is now being manufactured that is designed to be sagless. It is of the pivot type, so that the gate, even if wide and heavy, will not sag. The spring is built so as to not carry the weight of the gate. A very light tension is applied.

The weight of the gate is carried on ball bearings, eliminating friction. The pintle of the hinge is rigidly attached

to the bottom bracket so that the gate cannot get out of alignment when in use. This hinge is used to hold the gate open, either for right or left hand doors.

It is built for gates  $\frac{3}{8}$  to  $\frac{1}{2}$  inches thick and with a hand rail up to  $2\frac{1}{2}$  inches in width.



Sagless Gate Hinge for Office and Other Gates. The Weight of the Gate Is Carried on Ball Bearings.

These hinges are very easily installed, being fastened to the surface of the post and gate. The top socket may be applied to the surface of the gate without mortising. This is advantageous on metal gates. The brackets are usually mortised into the post so as to reduce the space between the edge of the gate and post.



### Stanley Opens Three Western Offices

WITH the merger of the Stanley Rule & Level Company and the Stanley Works, both of New Britain, Conn., it has become advisable, starting January 1, 1921, to open three new offices on the Pacific Coast. These new offices will be at San Francisco, Cal., with Mr. S. V. Armstrong as district sales manager; Los Angeles, Cal., with Mr. L. M. Knouse as district sales manager; Seattle, Wash., with Mr. Bruce Findlay as district sales manager.

These new offices, with the above men as managers, will be very glad to take care of the wants of the hardware-buying trade on the Pacific Coast, both for wrought steel hardware and carpenters' tools manufactured by the Stanley Works.



### Austin Absorbs New Plant

THE Fairmont Machine Company of Fairmont, W. Va., has been absorbed by the Austin Machinery Corporation of Chicago and New York, manufacturers of earthworking, concrete-mixing and material-handling machinery, thus substantially increasing their already extensive line of products as well as manufacturing facilities.



The Fairmont plant will continue to make its own line of machinery besides contributing to the manufacture and distribution of the complete line of earth-handling and cement-mixing machinery manufactured by the Austin Machinery Corporation.



## Slate Surfaced Unit Shingles of Unusual Merit

Ruberoid Unit Shingles, on account of their increased size and weight, present a material of unusual merit to the architect who has occasion to specify this type of roofing.

Their larger size (8" x 15 1/4" instead of the customary 8" x 12 3/4") makes it practicable for them to be laid five inches to the weather as against the four inches which the average slate surfaced shingle allows. They are surfaced with evenly crushed slate permanently colored in natural red and green, which is an additional decorative feature.

Ruberoid Unit Shingles are made to wear. Careful selection of raw materials, coupled with strict technical

supervision over every detail of manufacture, assures for them the same high quality standard which has gained for Ruberoid Roll Roofing its enviable reputation during the past quarter century.

Ruberoid Unit Shingles and other Ruberoid Weatherproofing Products are easy of access for builders and carpenters in executing your plans and specifications, for they are carried by leading hardware and building supply dealers everywhere.

Specifications for Ruberoid Unit Shingles and other Ruberoid Products, together with full descriptive matter, will be sent architects on request.

### Ruberoid Weatherproofing Products

#### Smooth Surfaced Roll Roofing Mineralized Roll Roofing

Unit Shingles

Strip Shingles

Roof Paint

#### Insulating and Sheathing Papers

Floor Covering

Deck Cloth

Waterproof Felt

Asphalt Saturated Felt

Cement-Waterproofing

Plastic

Paints

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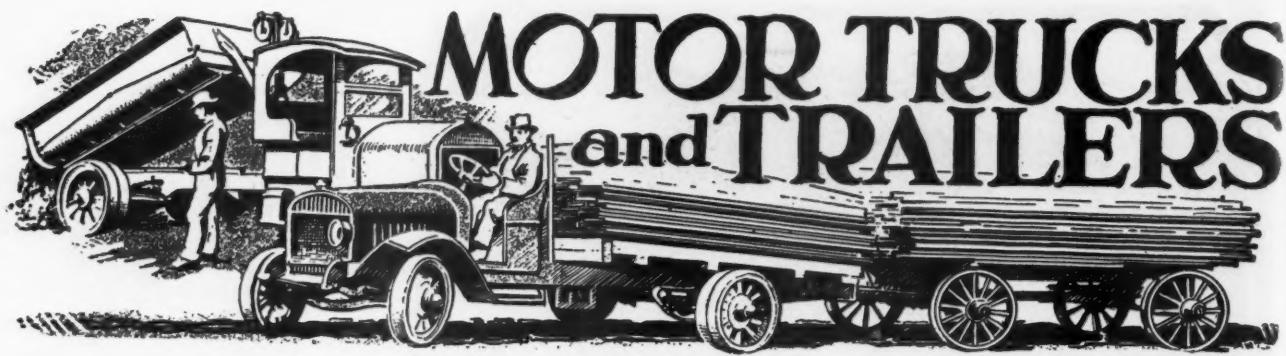
PAINTS

VARNISHES

PLASTICS



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



## Motor Truck Saves \$60 Per Day Over Horses

TENNESSEE CONTRACTOR USES 3½ TON TRUCK VERY PROFITABLY ON EXCAVATION JOB

By P. L. Sniffin

THE development of motor truck usage among contractors has reached the point where it is generally understood that for most kinds of work, motor trucks can be used more profitably than horse-drawn vehicles. Instances of substantial economics effected are every day occurrences.

Yet when a contractor finds that the installation of a single motor truck has earned for him the sum of \$130 a day on a particular contract, or a saving of \$60 per day over the same work done by teams, the instance is so remarkable that it is well worthy of special interest. And that is precisely what the Dempster Construction Company of Knoxville, Tenn., obtained from the 3½-ton truck shown in the illustration herewith.

In addition to this unusual profit and saving, the truck has enabled the company to undertake work that could not be possible with other forms of equip-

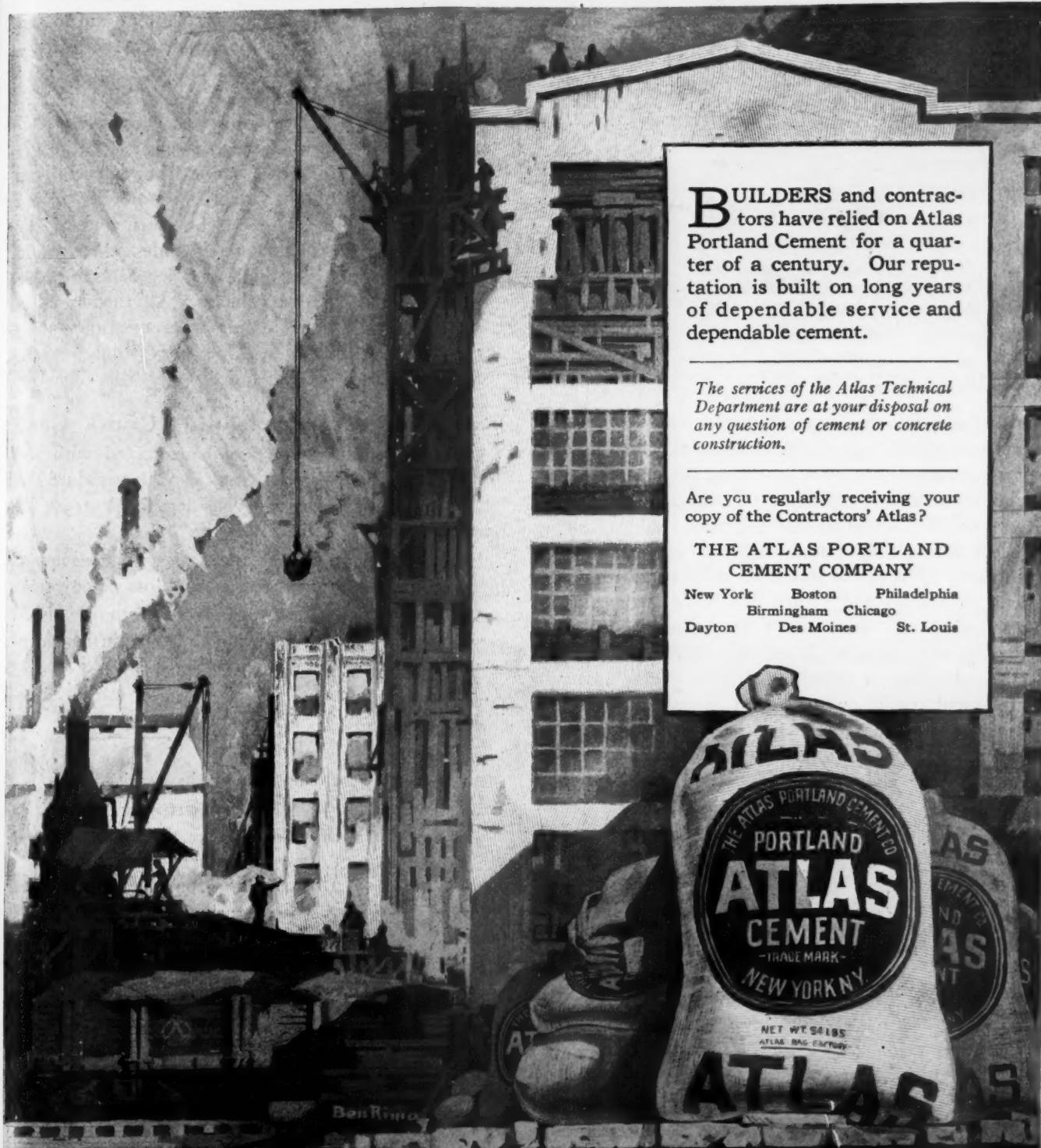
ment. For instance, the work required backing the truck down a 15 per cent grade to dump a heavy load of earth at the bottom, in a hollow 30 feet deep. While this is by no means an easy task, the Dempster truck made an average of 34 such trips every day.

When the company took a contract with the University of Tennessee to level a new athletic field, it had a two-fold problem, namely, to remove over 50,000 cubic yards of earth from the field and to fill a deep hollow with this earth. There were two ways of reaching this hollow, one a short cut down a 15 per cent grade that ran back 600 feet, and the other a long roundabout route over a very bad road to the other side of the hollow where the slope was more gradual. Originally they used 14 wagons of about 1½-tons capacity drawn by three mules each, and two light trucks. With this equipment, of course, they had to take the roundabout route. The road was so



Dumping the 3½-Ton Dump Truck Which Saved \$60 a Day for the Dempster Construction Company, Knoxville, Tenn. This Truck Made Thirty-four Trips Daily and Earned \$130. Their Work Required Backing Down a 15 Per Cent Grade to the Bottom of a Hollow 30 Feet Deep.

# DEPENDABILITY



BUILDERS and contractors have relied on Atlas Portland Cement for a quarter of a century. Our reputation is built on long years of dependable service and dependable cement.

*The services of the Atlas Technical Department are at your disposal on any question of cement or concrete construction.*

Are you regularly receiving your copy of the Contractors' Atlas?

#### THE ATLAS PORTLAND CEMENT COMPANY

New York      Boston      Philadelphia  
Birmingham      Chicago  
Dayton      Des Moines      St. Louis



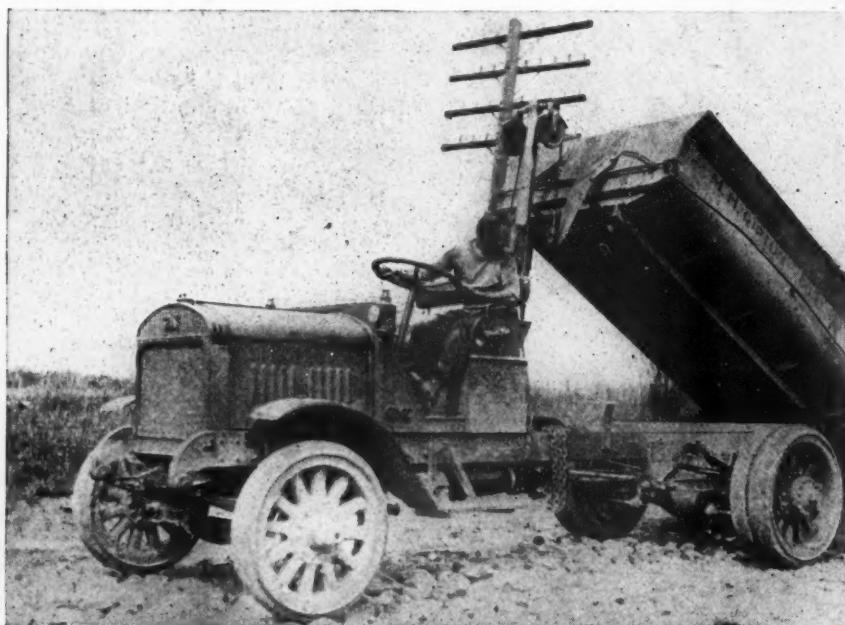
## ATLAS CEMENT



Dempster Construction Company Found This 3 1/2-Ton "Mack" Truck Could Keep Up with a Steam Shovel Despite the Heavy Grade. It Also Used a Short Cut Which Was Impassable for Horses.

bad that a two-ton internal gear driven truck struck one spot which strained the entire chassis and internal gear mechanism to such an extent that the jackshaft pinion was thrown entirely out of line and merely idled with the rear wheel so that the truck could not move.

Then, too, they found that this equipment could not keep up with the steam shovel because it took so long to unload and return and since their capacity was so limited. They solved the problem by installing the 3 1/2-ton dump truck which could take the short cut and make 34 trips a day. By using the teams and small trucks on the round about route and the Mack on the short cut, they were able to keep the steam shovel in constant operation, saving a great deal of time and money.



W. H. Rialon, Contractor at Rochester, N. Y., Finds This "GMC" Truck with Special Dump Body Very Handy and Economical. He Figures It Saves Considerable Time in Unloading.

To dump the earth by way of the short cut necessitated backing the truck down the entire grade and dumping its load at the edge of the bank. It had to back thru soft dirt at the very bottom and to the edge of the excavation with absolute sureness and pull up the hill again.

Says George R. Dempster, president of the company: "Such performance exceeds our expectations of the adaptability of the motor truck to our business, and of the economy in big units. We would never think of going back to team-drawn vehicles. All further additions to our transportation equipment will be heavy duty trucks such as this." \*

### Results from Not Cleaning Crank Case

WHEN the gases or fuel have mixed with the lubricating oil in the crank case they reduce the lubricating oil in body and considerably decrease its lubricating value. This results in:

1. An inefficient piston ring seal with consequent high consumption of fuel and oil and loss of power.
2. Premature wear of cylinders, pistons, piston rings, crankshaft, crank pin and piston pin bearings.
3. Excessive carbon deposits, causing pre-ignition and laboring of the engine.
4. Burned out bearings.
5. Poor compression.
6. Excessive carbon sediment in crank case.

### Remedy

To overcome these conditions it is very important:

That the carburetor choker valve be used sparingly.

That during the cold weather a means be provided to decrease the circulation of air thru the radiator, thereby enabling the engine to operate at a higher temperature.

BY AVOIDING the more common abuses which motor trucks are subjected to, hundreds of truck owners will realize a period of service two, three, or five times longer than they now get thru neglect and carelessness. Overloading a truck continuously has the same effect as running a truck with a capacity cargo up a steep grade day after day, without let-up.



# General Motors Trucks

## Conserve Time With GMC Trucks

MUCH valuable time is lost by truck drivers in reaching building sites with under-powered trucks.

In GMC Trucks there is the most elastic power available and the greatest dependability. GMC Trucks are dependable under any conditions where it is possible for a motor truck to go.

The cost of GMC Trucks is but slightly more than the cost of inefficient trucks and the saving in operation soon makes up that difference.)

Let us tell you why GMC Trucks are the best kind of investment for builders.

**GENERAL MOTORS TRUCK COMPANY**

PONTIAC, MICHIGAN, U.S.A.

*Branches and Distributors in Principal Cities*

(760)





## NEWS OF THE FIELD

### Mixer Association Elects New Officers

At the annual election of officers of the Concrete Mixer Association of the United States, recently held in Chicago, Clifford F. Messinger, general sales manager of Chain Belt Company, Milwaukee, was elected president for the coming year. W. B. Knickerbocker, of the Knickerbocker Company, Jackson, Mich., was elected vice-president. A. T. Scannell, of the Archer Iron Works, Chicago, Ill., was elected treasurer. H. E. Smith, president of the T. L. Smith Company, Milwaukee, Wis., was made chairman of the executive committee, while P. A. Koehring, secretary of the Koehring Machine Company, Milwaukee, Wis., and Z. W. Carter, sales director of the Austin Machinery Corporation, Chicago, Ill., were elected members of the same committee. The installation of officers took place at a dinner given by the association at the Atlantic Hotel, Chicago, on Friday evening, January 28.



### The New Upson Plant Ready for Operation

THE Upson Company, Lockport, N.Y., recently opened their new plant, designed by Charles A. Upson, president of the company. Actual construction was started in August, 1919, and the work was completed and put in operation in November, 1920. Since the founding of the Upson Company in 1902 yearly additions have been made to the plant, but it was evident that the largest unit of all was needed during the last few years. Plans were drawn up during the war and as soon as building restrictions were lifted the work started.

The new addition, which comprises the buildings shown in the left half of the accompanying bird's-eye view of the Upson plant, is built of blended tapestry brick. These buildings are over 500 feet long. They rest on solid rock and have heavy concrete foundations.

The inside walls are of light gray brick, with white mortar, making light, cheery interiors. The roofs are of steel and gypsum. Creosoted wood blocks cover the floors wherever trucking is to be done, the remainder of the floor space being concrete.

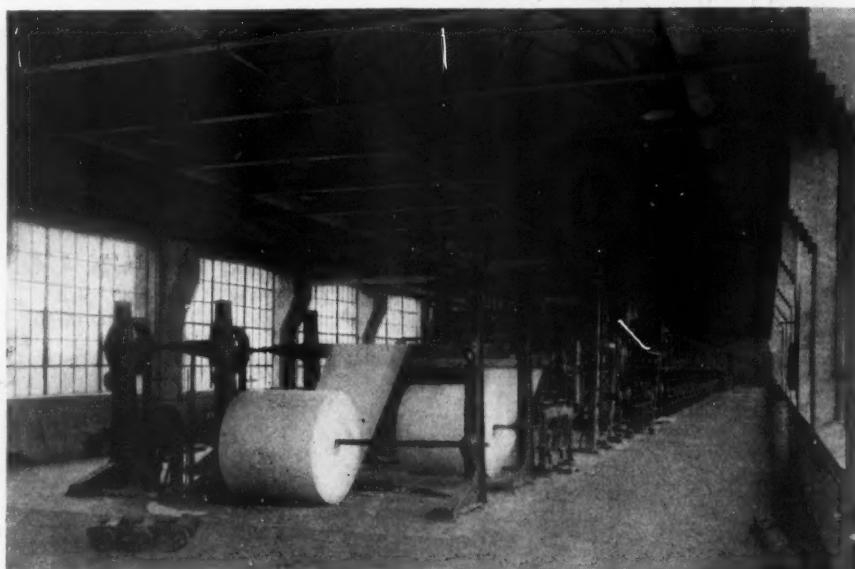
Raw material is received at the south end of the plant and from there travels in a straight line thru the stock house to the beater or fibre preparation building, which is 114 feet long by 118 feet wide, and four stories high.

On the first floor is located a massive line shaft drive, to whose pulleys are belted the machines on the floor above.

The second floor is given over to beating engines and refining machines. There are seven large beaters and four grinders, which reduce ground wood and sulphite into form suitable for the fabrication of Upson board.

Other equipment used in the preparation of fibre occupies the third and fourth floors of this building.

The machine building is 400 feet long. In this building is located a seven-cylinder board machine which has 90 driers. The machine is 320 feet long, and can make board 108 inches wide. At the wet end of the machine room is located a large overhead crane for the purpose of removing the heavy rolls of the machine whenever occasion demands. At the finishing end, where the stock has been wound on large rolls, another crane picks up the huge rolls and conveys them to a scale for weighing. The rolls are picked up again and dropped thru an opening in the floor to trucks on the floor below, where they are hauled by tractors thru a subway



One of the Large Machines That Manufactures Upson Board in the New Plant. This Machine Takes the Beaten Pulp and Forms It Into One-Ply Board. It Is Dried and Put in Rolls as Shown in the Front of the Picture. From Here the Rolls Go to the Laminating Room.

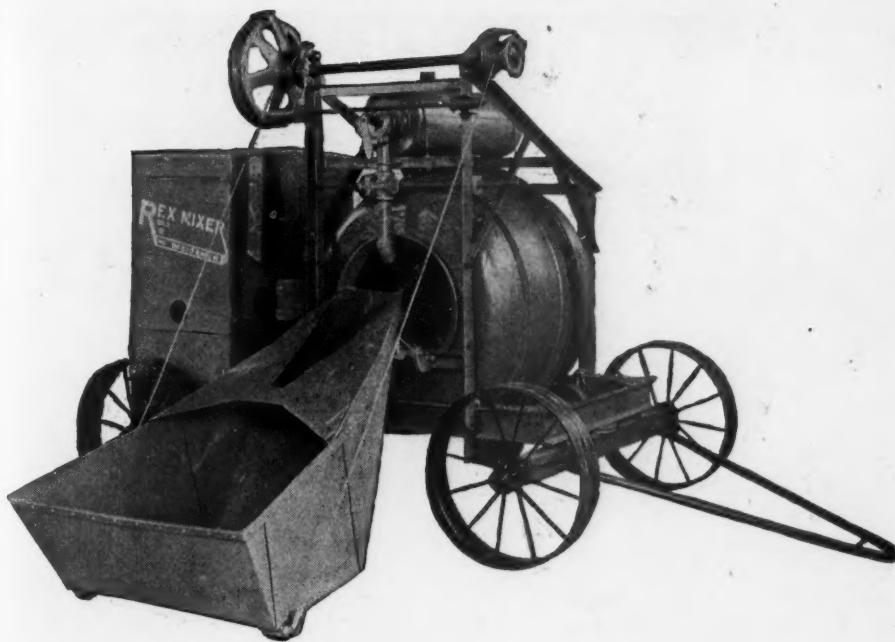
under the street to the laminating plant.

At right angles to the machine room runs a two-story building 40 by 120 feet. The first floor is utilized for storage, and on the second floor is located a complete machine shop for repairing equipment used about the plant. In this building also is located the general stores room, while several sub-stores are located in various points about the plant.

The engine room is 70 by 85 feet and contain the latest type of equipment. The boiler house is 50 by 63 feet. The boilers produce nearly 4,000 horse-power and are equipped with the latest stoking and ash removal devices.



Bird's-Eye View of Upson Plant, Lockport, N. Y., as It Appears with Latest and Largest Addition, Which Was Recently Completed. Chas. Upson, President, Designed the New Buildings.



## 1921 Will Reward Fighters

In the last three and one-half years America's population has fast outgrown its homes, schools, offices and stores. Now, men, money and materials are available. This year will see the beginning of a huge program for new buildings, repairs and extensions which cannot longer be delayed.

Every building dollar, however, will be spent wisely. Competition will be keen. The successful building contractor must be more careful than ever to use methods and equipment which place concrete at the lowest cost possible.

A Rex 7-S Mixers will help you secure that result. Its compact and sturdy build, its fast charging and discharging, its reliable Novo power, and its ability to turn out from 80 to 100 cubic yards a day, all guarantee Rex 7-S owners a top profit on every concrete job.

Judged by any one-bag mixer standard—big yardages, constant serviceability, low cost operation, or long working life—you will find the Rex 7-S Mixer far the best buy on the market.

*Rex Building Mixers are made in the following sizes—4-S 7-S, 14-S, 21-S, and 28-S, the numbers indicating the capacities in cubic feet of concrete.*

# REX MIXERS

*Rex Chain, Rex Traveling Water Screens  
Rex Sprockets, Rex Elevators and Conveyors*

**CHAIN BELT COMPANY, MILWAUKEE**  
*Branch Offices and Representatives in Principal Cities in the United States and Abroad*

**CHAIN BELT COMPANY**  
Milwaukee, Wisconsin

Gentlemen :

Please send me booklets picturing and describing in detail the Rex Mixers checked.

Rex 4-S Mixer    Rex 7-S Mixer  
 Larger Rex Mixers

Name.....

Address.....

(4)



Distributors and Dealers of the Phelps Light & Power Company, Rock Island, Ill., in Attendance at Annual Convention.

### Phelps Dealers in Convention

DISTRIBUTORS and dealers of the Phelps Light & Power Company recently attended the annual convention held by that company at Rock Island, Ill. As a mark of appreciation for his past efforts the delegates presented the president, R. W. Phelps, with a gold watch.

Mr. A. C. Graham, advertising manager, gave a very interesting talk on "The Newspaper as a Salesman."



### Unique Exhibit Proves Business Getter

IN the illustration shown here is the unique exhibit prepared by the Diamond Metal Weatherstrip Company, Columbus, Ohio, for the annual state fair held during the latter part of the summer. It proved unusually successful as a salesman and was constantly attended by some of the 360,000 people who attended the fair.

The exhibit in the background represents a side wall of a house in which several types of windows are installed, in-

cluding a double hung sliding window, double casement, opening in, and a double French door, opening in, all of which are equipped with Diamond metal weatherstrip. This part of exhibit was boxed in, and a powerful mine blast fan running at a speed of 2,500 revolutions per minute, blowing directly against the doors and windows at a wind pressure of 20 miles per hour, was set in motion. Water pipes were arranged at the top and behind the wall with holes every inch to give the effect of a severe rainstorm to be blown against the doors and windows. This was used to demonstrate the effectiveness of the weatherstrip against rain or wind.

It was also shown at the annual convention of architects this winter and will be staged at many of the large building expositions during the coming year. All glass in the windows and doors were glazed with Diamond calking compound.



### Chain Belt Appoints Eastern Manager

GEORGE J. BLANTON, who for the past four years has been connected with the Engineering Sales Department of the Chain Belt Company, Milwaukee, has been made New York district manager. Before joining the "REX Family" in 1917, Mr. Blanton was associated with the General Electric Company for eight years. He will leave immediately to take charge of the company's offices at 50 Church Street, New York City.



### Smith Sales Office Moves to Milwaukee

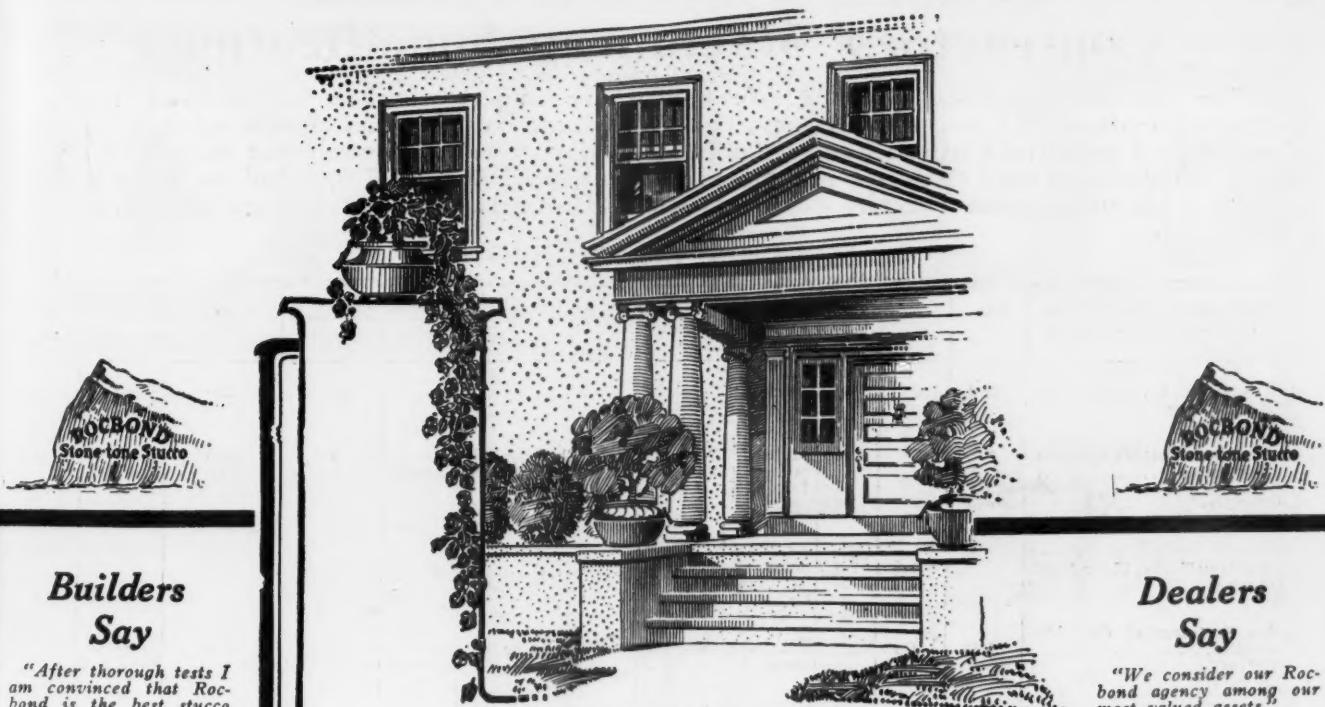
THE T. L. Smith Company, whose general sales offices have been located at 470 Old Colony Building, Chicago, has moved this entire department and its complete personnel to Milwaukee, Wis., where it will be located at the factories, 1125 Thirty-second Street. The advertising department will also operate from the factory.

This important move was made principally to accomplish closer co-ordination between sales and service. General Sales Manager R. E. S. Geare will now have direct jurisdiction over the service department at the factory.

Sales of The T. L. Smith Company in 1920 were practically doubled as compared with 1919, which makes the biggest year in the history of the company.



Unique Display of Diamond Metal Weatherstrip Company, Columbus, Ohio. It Is Being Shown at All Conventions and Attracts Large Crowds.



### Builders Say

"After thorough tests I am convinced that Rocbond is the best stucco proposition on the market today."

"Our station building, completed in December, 1915, is as clean and in as good condition as the day it was applied."

"The Rocbond work cost us about \$100 more than our original frame plans, but we sold the house for \$500 more."

"This office will not hesitate to specify Rocbond stucco for all future stucco work."

"Stood three years and is as solid as when put on, and not a crack in it."

"Rocbond is the only stucco construction this company will loan on in the future."

### Rocbond Stone Homes

Give the impression of massiveness, reflecting strength, beauty and character, affording the refinements and exclusiveness of stone and brick, at about the cost of frame, raising a moderate investment far above the common-place.

#### ROCBOND Stone-tone Stucco

Makes possible many practical economies. Permitting a wide range of designs and effects, well within the means of the average builder.

Rocbond is successfully applied over brick, tile and frame construction. It lends itself admirably to plastic effects and provides a seamless stone surface free from weakness or defects. Rocbond is weather and fire resisting, requires no painting and is applied successfully summer and winter alike.

*A request from you will bring helpful suggestions and details.*

**RIVETTE LUMBER & COAL CO.**  
OMAHA, NEB.

(Successful Rocbond Dealers Number 18)

### Dealers Say

"We consider our Rocbond agency among our most valued assets."

"After the first few jobs were completed, the business came almost without effort."

"We are getting fully 90% of the stucco business in this community. Keep shipments coming."

"Since taking on Rocbond we have completely overcome the bad results experienced from a former material. We are supplying the better class of mechanics almost to a man."

"We have a number of jobs ahead, and with decent weather will keep going right through the winter."

"Building is at a standstill here, but the over-coating work continues to come right along."

## It's Going to Be a Stucco Year

Note the increasing frequency in which "stucco" is being specified.

Architects will tell you that the requests for "stucco plans" are without a parallel in their experience.

Good stucco construction is certain to play an important part in the building activities of the near future.

In many communities you will find stucco construction dominating—overshadowing all else. These are Rocbond communities, and back of every successful Rocbond development will be found a successful Dealer.

Rocbond has done much to promote stucco stability and confidence; a veteran in the point of service that has matched quality with the best in stucco construction and won its way

into the favor of a host of stucco-loving Architects and Builders.

The best laid plans of the Architect and Builder avail little, if the materials provided falter.

Rocbond is dependable—carefully selected materials, proper grading and scientific preparation provide for that—giving Rocbond built-in qualities less exacting standards can never attain.

Rocbond stucco fills an important niche in modern building requirements, meeting every demand that a good stucco construction can be called upon to meet; relieving the Builder of future concern as to the ultimate success of his transactions.

Convincing literature upon request.

**DEALERS AND CONTRACTORS—everywhere, in towns large and small—write for special "One Dealer in a Town" proposition. Full particulars and plans complete. WRITE TODAY**

#### It's Going to Be a Rocbond Year

Address **THE ROCBOND COMPANY**  
533 Home Guard Building, Van Wert, Ohio  
Cedar Rapids, Iowa

**ROCBOND**  
Exterior Stucco  
Two Plants:  
Van Wert, Ohio  
Cedar Rapids, Iowa

**ROCBOND**  
Exterior Stucco  
Two Plants:  
Van Wert, Ohio  
Cedar Rapids, Iowa

# Contractors' Machinery Specifications

For the convenience of our readers who are in the market for various kinds of building equipment and machinery, the American Builder has compiled a very condensed and complete machinery specification list, which is presented herewith. The busy builder will find this list a very efficient handbook and catalog to help him in making his selections for the coming year. Consult this list to find the machines you need.

## MIXER SPECIFICATIONS

| NAME OF COMPANY AND TRADE NAME OF MIXER                             | Price   | CAPACITY in cu. ft. |           | Type                            | Material Mixed              | Equipment  | POWER                     |              | Weight Lbs.          | Size                            | Misc.                          |
|---|---|---------------------|-----------|---------------------------------|-----------------------------|--|---------------------------|--------------|----------------------|---------------------------------|--------------------------------|
|   |   | Mix                 | Un-mixed  |                                 |                             |  | Kind                      | H. P.        |                      |                                 |                                |
| A. S. Aloe Co., St. Louis, Mo.<br>"Magic Mixer"                     | \$300   | 4½                  | 5½        | Revolving Drum                  | Concrete                    | .....  | Gas.....                  | 2½           | 1200                 | Wheels<br>Front 18"<br>Rear 24" | .....                          |
| American Cement Machine Co., Keokuk, Iowa<br>"Boss"<br>"Builders"   | \$350<br>See price list for seven other sizes         | 7                   | 10        | Batch Paving Revolving Drum     | Concrete Mortar             | Power Charging Skip<br>Hoisting Attachment<br>Water Measure.....                       | Gas.....<br>Electric..... | 6<br>5       | 2750<br>2700         | Front 22"<br>Rear 28"           | .....                          |
| Archer Iron Works, Chicago, Ill.<br>"Archer"                        | .....   | 4½<br>7             | 6-7<br>10 | Batch Revolving Drum            | Concrete                    | .....  | Gas.....                  | 3<br>6       | 1920<br>2600         | 28"                             | .....                          |
| Atlas Engineering Co., Milwaukee, Wis.<br>"Atlas"                   | \$710   | Catalog             | 33        | Batch Revolving Drum            | Concrete                    | Power Charging Skip  | Gas.....<br>Electric..... | 3½<br>3      | 2500                 | Front 18x4<br>Rear 22x4         | .....                          |
| Austin Machinery Corp., Chicago, Ill.<br>"Austin"                   | According to Equipment<br>See Catalog for small sizes | 21                  | 33        | Batch Paving Revolving Cube     | Concrete Plaster Glass, etc | Power Charging Skip<br>Hoisting Attachment<br>Boom and Bucket...<br>Water Measure..... | Gas.....<br>Steam...      | 25<br>14     | 20000                | 15' 4" x 8'                     | .....                          |
| Badger Wire & Iron Works, Milwaukee, Wis.<br>"Kwik-mix"             | \$284   | 3½                  | 4         | Batch Revolving Drum            | All                         | Hoisting Attachment  | Gas.....                  | 1½           | 900                  | 16"<br>16"                      | Reverse Unloading              |
| Barrel Mixer Co., Madison, Wis.<br>"Wynn Barrel Mixer"              | \$200   | 3½                  | .....     | Portable Revolving Barrel       | .....                       | .....  | Gas.....                  | 1½           | 750                  | 30x3½                           | Hoist                          |
| Blystone Mfg. Co., Cambridge Springs, Pa.<br>"Blystone Batch Mixer" | Price List  | .....               | .....     | Drum with Revolving Shovels     | All                         | Hoisting Attachment  | Gas.....<br>Electric..... | 1½-6<br>1½-6 | 2910                 | 4' x 9½'                        | .....                          |
| The Bolte Mfg. Co., Kearney, Neb.<br>"Bolte" and "Handy"            | 105-350   | Wide Range          | .....     | Batch Continuous                | Concrete Mortar             | Charging Hopper...   | Gas.....                  | 2-3          | 650-1350             | 3½' x 8'                        | .....                          |
| Chain Belt Co., Milwaukee, Wis.<br>"Rex"                            | .....   | Catalog             | .....     | Batch Revolving Drum            | Concrete                    | Power Charging Skip<br>Hoisting Attachment<br>Boom and Bucket...<br>Water Measure..... | Gas.....<br>Electric..... | .....        | .....                | .....                           | .....                          |
| C. H. & E. Mfg. Co., Milwaukee, Wis.<br>"C. H. & E."                | .....   | .....               | .....     | .....                           | Mortar                      | .....  | Gas.....                  | 5            | 2500                 | .....                           | .....                          |
| Contractors Equipment Co., Keokuk, Iowa<br>"Packard"                | \$325   | 3                   | 5         | Batch Revolving Drum            | Concrete Mortar             | Low Charging...<br>Batch Charging...   | Gas.....<br>Electric..... | 3<br>3       | 1200                 | Handy Truck                     | .....                          |
| Construction Machinery Co., Waterloo, Iowa<br>"Wonder"              | .....   | 5                   | 7½        | Batch                           | All                         | Power Charging Skip<br>Water Measure.....  | Gas.....<br>Electric..... | 5            | 3375                 | 48" x 103"                      | .....                          |
| W. E. Dunn Mfg. Co., Holland, Mich.<br>"Dunn Shovel Mixer"          | \$380   | 4½-5                | 5-6       | Revolving Tub with Shovels      | All                         | .....  | Gas.....                  | 3            | 1550                 | 96" x 48"                       | Bottom Discharge               |
| Elite Mfg. Co., Ashland, Ohio<br>"Low-down"                         | .....   | 3-10 cu. yds.       | Per hr.   | Continuous                      | Concrete Mortar             | .....  | Gas.....                  | 4            | .....                | .....                           | .....                          |
| E. F. Elberg Co., Inc., Parkersburg, Iowa<br>"Elmco"                | \$153.50<br>166.75                                    | 3                   | .....     | Revolving Barrel                | Concrete                    | .....  | Gas.....                  | 2            | 600                  | .....                           | .....                          |
| The Frank Mfg. Co., Des Moines, Iowa<br>"Frank"                     | \$115<br>375  | 3-7                 | 5-10      | Fixed Tub with Revolving Shovel | All Kinds                   | No Loader.....   | Gas.....                  | 2-3½         | 575 to 1700          | 3½x4 to 4x7                     | Quick discharge<br>Bottom door |
| Gray Iron Foundry Co., Reading, Pa.<br>"Keystone"                   | \$325-600   | 4-7                 | 6-10      | Batch Revolving Drum            | Concrete                    | Power Charging Skip<br>Water Measure.....  | Gas.....                  | 3-4 & 6      | 1700<br>2600<br>3600 | Standard Gauge                  | .....                          |

# DEVOE



**The Safest decisions  
are made by "the old  
man with the scythe"**

**T**HREE is no more severe critic; no more searching investigator than Father Time. He thinks calmly; acts slowly; and judges with unhurried justice that we mortals must envy.

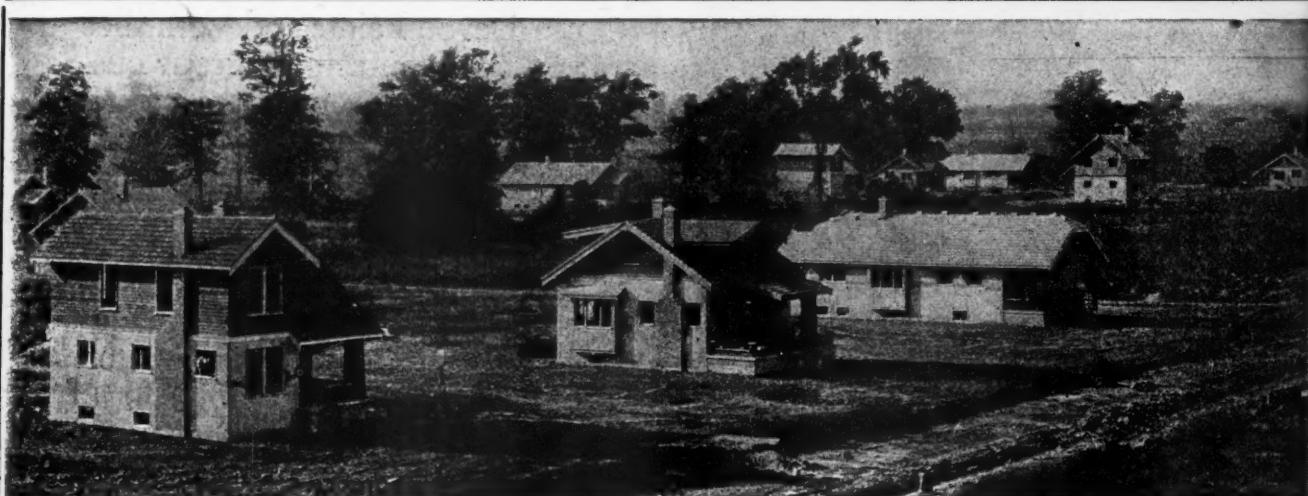
Devoe Paints have been highly regarded for more years than this country has been a Republic. When you specify or use Devoe Paints and Varnishes you give yourself and your customers the benefit of the oldest, hardest test any products can pass—Father Time's.

Devoe Products are proven and backed by 166 years of experience of the oldest paint manufacturing concern in the United States.

**Manufactured by**  
**Devoe & Raynolds Co., Inc.**  
**New York** *Paints, Varnishes, Stains,  
Enamels, Brushes, Insecticides* **Chicago**



| NAME OF COMPANY AND TRADE NAME OF MIXER                         | Price                       | CAPACITY             |                                 | Type                      | Materials Mixed                           | Equipment  | POWER  |                              | Weight Lbs. | Size                       | Misc.                          |
|---|-----------------------------|----------------------|---------------------------------|---------------------------|---|--|--|------------------------------|-------------|----------------------------|--------------------------------|
|   |                             | In Cu. Ft.           | Mix                             |                           |   |  | Kind   | H. P.                        |             |                            |                                |
| Ideal Concrete Mach. Co., Cincinnati, Ohio. "Ideal"             | \$1330                      | 7.7                  | 10                              | Batch Revolving Bond      | Concrete Mortar                           | Power Charging Skip Water Measure.....                           | Gas.....<br>Steam.....<br>Electric.....                          | 6<br>5<br>5                  | 4500        | 85"x45"                    | .....                          |
| Iowa Spreader & Engine Co., Waterloo, Ia. "Ever-Ready"          |                             | 2                    | 9                               | Batch Revolving Drum      | Concrete Mortar                           | Hoisting Attachment Water Measure.....                           | Gas.....<br>Kerosene   | 2-7                          | .....       | .....                      | .....                          |
| Jaeger Machine Co., Columbus, Ohio. "Jaeger"                    |                             | 8                    | Other                           | 12 Sizes                  | Batch Revolving Drum                      | Concrete   | Power Charging Skip<br>Hoisting Attachment<br>Water Measure..... | Gas.....                     | 4000        | 4" Channels                | See Catalog For 13 Other Sizes |
| Judy Mfg. Co., Centerville, Iowa. "Giant"                       | \$1025                      | 7                    | 11                              | Batch Revolving Drum      | Concrete Mortar                           | Power Charging Skip  | Gas.....   | 6                            | 3900        | 42"x110"                   | .....                          |
| The Knickebocker Co., Lansing, Mich. "Knickebocker"             | 14<br>7<br>5<br>4           | 21<br>10<br>7<br>6   | Batch Continuous Revolving Drum | Concrete Mortar           | Power Charging Skip<br>Water Measure..... | Gas.....<br>Steam.....<br>Electric.....                          | 6<br>12<br>5   | 4200<br>3500<br>3100<br>2200 | Catalog     | .....                      | .....                          |
| Koehring Machine Co., Milwaukee, Wis. "Dandie"                  |                             | 7                    | 10                              | Batch Revolving Drum      | Concrete                                  | Power Charging Skip<br>Hoisting Attachment<br>Water Measure..... | Gas.....<br>Steam<br>Electric                                    | 5<br>4                       | 2560        | 11'3"x47 1/2"<br>8'11"x42" | .....                          |
| Lakewood Engineering Co., Cleveland, Ohio. "Lakewood Universal" | \$725                       | 7                    | 10                              | Batch Revolving Drum      | Concrete Mortar                           | Charging Platform Team Pole.....                                 | Gas.....   | 4                            | 2765        | 92"x39 1/2"                | .....                          |
| Lansing Co., Lansing, Mich. "No. 7 Lansing"                     | \$750                       | 5                    | 7                               | Batch Revolving Drum      | Concrete Mortar                           | Power Charging Skip<br>Hoisting Attachment<br>Water Measure..... | Gas.....   | 5                            | 3000        | 96 1/2"x41 1/4"            | .....                          |
| Little Whirlwind Mixer Co., La Crosse, Wis. "Little Whirlwind"  | See Catalog for Information |                      |                                 |                           |   |  |  |                              |             |                            |                                |
| Miles Mfg. Co., Jackson, Mich. "Simpler"                        | \$295                       | 10 cu. yds. per. hr. |                                 | Continuous Revolving Drum | All                                       | Complete   | Gas.....<br>Electric   | 3<br>3                       |             |                            |                                |



Mars Hill Development for the Lafayette Motors Co., Indianapolis, Ind.

## Lathed with E-COD FABRIC

All of the fifty-six houses built in this development to date have, as a plastering base, both exterior and interior, the one fabric that offers strength, durability and economy. The heavy waterproof felt backing of E-COD FABRIC provides double insulation against cold and heat, serving as a base for stucco on outside and plaster on interior



walls. The galvanized wire reinforcement of E-COD FABRIC, completely embedded in the mortar, forms a base that cannot rust or corrode. For economical, durable construction, E-COD FABRIC is "the ideal plastering base," being water-proof, rust-proof, weather-proof, fire-retardant and sound-deadening.



For full particulars about E-COD FABRIC, write us  
MacADAMS & CALL, 1731 Conway Bldg., Chicago, Ill.



# The Thick Shingle Is Best On the Roof

The 5/2 Rite-Grade  
Shingle, being thicker,  
lasts longer and is  
cheapest in the long  
run. It lays flat on  
the roof.



| NAME OF COMPANY AND TRADE NAME OF MIXER                          | Price                        | CAPACITY in Cu. Ft.     |            | Type                         | Material Mixed          | Equipment  | POWER                             |                                    | Weight Lbs.         | Size        | Misc. |
|--|------------------------------|-------------------------|------------|------------------------------|-------------------------|--|-----------------------------------|------------------------------------|---------------------|-------------|-------|
|  |                              | Mix                     | Un-mixed   |                              |                         |  | Kind                              | H P                                |                     |             |       |
| New Way Mfg., Co., Eau Claire, Wis. "New Way"                    | \$765                        | 7                       | .....      | Batch Revolving Drum         | Concrete Mortar Plaster | Batch Hopper.....  | Gas.....                          | 4                                  | 2300                | 43"x34"x50" | ..... |
| Oshkosh Mfg. Co., Oshkosh, Wis. "Oshkosh Low Charger"            | 57                           | 8                       | 11         | Batch Paving, Revolving Drum | Concrete Mortar         | Power Charging Skip Hoisting Attachment Water Measure.....                     | Gas..... Steam Electric.          | 3-5-7-9 6-8-10-12-14 3-4-5         | 2800-24000          | .....       | ..... |
| Pony Mixer Co., West Bend, Wis. "Pony"                           | \$17.50                      | 2 $\frac{1}{2}$         | .....      | Batch Revolving Drum         | Concrete                | .....  | No Power-Furnished                | .....                              | 245                 | .....       | ..... |
| Raber & Lang Mfg. Co., Kendallville, Ind. "Bulldog"              | .....                        | 1 $\frac{1}{2}$ cu. yd. | 1 cu. yd.  | Batch Revolving Drum         | Concrete                | Power Charging Skip Hoisting Attachment  | Gas.....                          | 4-6                                | .....               | 5" Channel  | ..... |
| Ransome Concrete Machinery Co., Dunellen, N. J. "Ransome Bantam" | \$625                        | 7                       | 10         | Batch Paving, Revolving Drum | All                     | Low Charging Skip.. Hoisting Attachment Water Measure.....                     | Gas..... Steam Electric.          | 4 5                                | 2800                | 5" Channel  | ..... |
| Republic Iron Works, Tecumseh, Mich. "Republic"                  | .....                        | 3 $\frac{1}{2}$ 7       | 5 10       | Batch Revolving Drum         | Concrete Mortar         | Rotary Water Pumps. Power Charging Skip Hoisting Attachment Water Measure..... | Gas.....                          | .....                              | 2200-3400           | 5" Channel  | ..... |
| T. L. Smith, Milwaukee, Wis. "Smith"                             | \$930 (Depends on equipment) | 7                       | 11         | Batch Paving, Revolving Drum | Concrete                | Power Charging Skip Boom and Bucket Hoisting Attachment Water Measure.....     | Gas..... Kerosene Steam Electric. | 5 4 5                              | 2420 3000           | 6" Channel  | ..... |
| Sheldon Mfg. Co., Nehawka, Nebr. "Sheldon"                       | \$50 150 200                 | 3 cu. ft. per batch     | .....      | Batch                        | Concrete                | .....  | Gas..... Electric.                | 1 $\frac{1}{2}$ -2                 | 285 755 860         | 42"x72"     | ..... |
| Standard Scale & Supply Co., Pittsburgh, Pa. "Standard"          | (Depends on equipment)       | 4 7 14 21               | 6 10 20 30 | Batch Revolving Drum         | Concrete                | Low Charging or Power Charging Hoisting Attachment                             | Gas..... Kerosene Steam Electric. | 3 6 10 12                          | 2500 4200 6000 7600 | Catalog     | ..... |
| Stewart Mfg. Co., Waterloo, Iowa. "Stewart"                      | \$60 to \$560                | 2 to 11                 | 2 4 6 9    | Batch                        | Concrete Mortar         | Skids with Loader....  | Gas.....                          | 1 $\frac{1}{2}$ -2 $\frac{1}{2}$ 3 | 325 to 2800         | .....       | ..... |
| United Engine Co., Lansing, Mich. "United"                       | .....                        | .....                   | .....      | Batch Revolving Drum         | Concrete                | .....  | Gas.....                          | .....                              | .....               | .....       | ..... |

# Fiberlic WALL BOARD

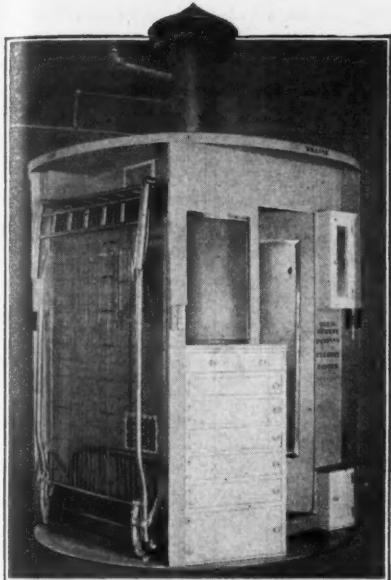
The material from which it is made, the fact that the fibre in Fiberlic is chemically cleansed and that these fibre lengths give the finished product that natural reinforcement that is lacking in ground wood or mechanical pulp boards, is in itself a guarantee of the superiority of

## FIBERLIC WALL BOARD

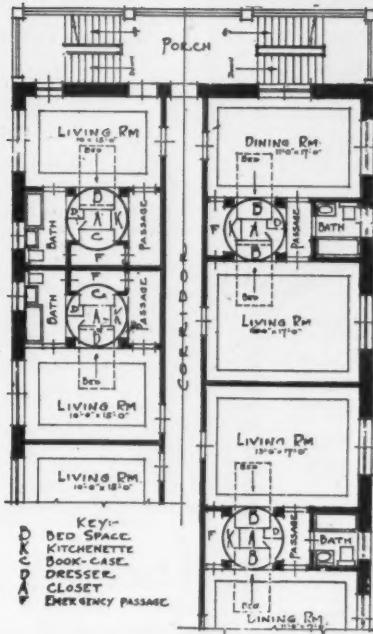
for strong, permanent, economical and sanitary construction. Fiberlic Wall Board is a patented board. Write for samples and prices.

MacAndrews & Forbes Company, 200 Fifth Ave.  
MILLS: CAMDEN, N. J. NEW YORK





## U-TURN-IT MAKES ONE ROOM A 4-ROOM APARTMENT



The U-Turn-It Device installed in one room converts it into four room apartment. The device contains bed, library, dresser, kitchenette and interior clothes closet. Has perfect self-ventilation at all times. Hot and cold water connections with air tight revolving joints designed to revolve with device, approved by Bureau of Plumbing laws of Buffalo, N. Y.

High Caliber Agents Wanted to establish subsidiary Companies and exhibits to sell devices and Build U-Turn-It Summer Cottages, Bungalows and Income Apartments.

# U-TURN-IT

MAKES IT FIFTY-FIFTY BETWEEN OWNER AND TENANT

The device is less than seven feet in diameter, seven feet six inches in height built of steel frame. Revolves on ball-bearing floor ring and weighs installed 1500 lbs. Price \$600 f. o. b. shipping point, less 10% discount to original users. U-Turn-It Summer cottages \$1000 and up. Popular for Summer resorts and sea shore.



The U-Turn-It apartment saves a vast amount of space over the usual apartment and will approximately double the profit on investment, owing to the greater amount of apartments obtainable in the same space.

View to left is proposed U-Turn-It Income Apartment House to be erected.

Exhibit Room in New York City, 1746 Broadway

**U-TURN-IT HOUSEKEEPING SYSTEM, Inc.**  
GENERAL OFFICES, 47 NIAGARA STREET, BUFFALO, N. Y. U-TURN-IT EXHIBITS IN LARGE CITIES

# Winthrop Asphalt TAPERED Shingles

Here's the one Asphalt Shingle that is really tapered. Thin at the top, thick at the butt and impregnated with real asphalt. Winthrop Asphalt Tapered Shingles are popular with contractors, property owners and workmen alike, because they are

## Easy to Lay—Low in Cost—Protect Perfectly

See That Taper



See That Butt

Winthrop Asphalt Tapered Shingles are light and easily handled. They can be laid with unusual speed. You can use roofing that costs more, but you will find none that protects better. Where absolutely A1 quality is desired, at reasonable cost, Winthrop Asphalt Tapered Shingles should be your first choice.

A. J. Van Deusen, Concrete Culvert Co., Winona, Minn., writes—"In 1912 I began to use Winthrop Tapered Shingles. I recommend them ahead of everything else I know of for roofing. There is nothing that can beat them for holding their place and keeping the roof perfectly tight."

H. B. Milmine & Co., Toledo, Ohio, writes—"Winthrop Tapered Shingles were placed on our office building about 11 years ago, and they appear to be as good as when placed. We have not had any expense for maintenance."

Write for Sample Shingles and Prices.

**Beckman-Dawson Roofing Co.**  
1413 Association Bldg., CHICAGO, ILL.

Factory, Argo, Illinois

Also Manufactured by  
Beecher, Peck & Lewis of Detroit, Mich.  
Lockport Paper Co., Lockport, N. Y.  
Brantford Roofing Co., Ltd., Brantford, Ont., Canada  
Canadian Roofing Co., Ltd., Windsor, Ont., Canada



## Floor Surfacing Machine Specifications

| NAME OF COMPANY AND TRADE NAME OF MACHINE                                       | Price         | Type            | Size                    | Power                 | Attachments  | Wgt. lbs.   |
|---|---------------|-----------------|-------------------------|-----------------------|--|-------------|
| American Floor Surfacing Machine Co., Toledo, Ohio.....<br>"American Universal" |               | Drum            | Single 12"              | Electric 1½ H.P.      | Edge Sanding Drum Vacuum Bag 100 ft. wire gauge for cutting garnet paper | 435         |
| Boettcher Co., Chicago, Ill.....<br>"Ideal Floor Sander"                        | \$300         | Drum            | 8"x12" 8"x15"           | Electric 2 H.P.       | Vacuum Bag, etc.   | 275         |
| Electric Rotary Machine Co., Chicago, Ill.....<br>"Electric Rotary Machine"     | \$200         | Disc            | 14"                     | Electric ½ H.P.       | Sanding Disc Grinder Head, etc., etc.                                    | 130         |
| International Floor Machine Co., New York City.....<br>"International"          | \$250         | Drum            | 9"x4"                   | Electric 1 H.P.       | Vacuum Bag   | 250         |
| Kelley Electric Machine Buffalo, N. Y.....<br>"Kelley Floor Machine"            | \$220-<br>265 | Disc            | 12"-<br>18"             | Electric ½-½          | Sanding Disc Grinder Head Scrubbing Brush Polishing Brush                | 125         |
| M. L. Schleuter, Chicago, Ill.....<br>"Rapid Floor Surfacer"                    | \$200-<br>300 | Two Discs Drums | 12"<br>15"<br>18"       | Electric 1½-2-3 H. P. | Side Roller Vacuum Bag Carrying Handles                                  | 330-<br>600 |
| Waywell Chappell Co., Waukegan, Ill.....  |               | Drum            | 9"<br>12"<br>15"<br>18" | 1-1½ 2-3              | Drum shifts to reach all edges Vacuum Bag                                | ...         |

## Universal Woodworker Specifications

| NAME OF COMPANY AND TRADE NAME OF MACHINE  | Type                   | POWER                     |        | Weight lbs.  | Price | Height of Table | Floor Space    |
|--|------------------------|---------------------------|--------|--------------|-------|-----------------|----------------|
|  |                        | Kind                      | H.P.   |              |       |                 |                |
| American Saw Mill Machinery Co., Hackensack, N. J.....<br>"American"                 | Portable...            | Gas...<br>Electric        | 5      | 1000         | \$325 | 34"             | 54x54          |
| Crescent Machine Co., Leetonia, Ohio.....<br>"Crescent"                              | Stationary             | Electric                  | 5<br>7 | 2200<br>3200 | ..... | 36"<br>42"      | 75x81<br>75x90 |
| Fairbanks, Morse Co., New York City.....<br>"Fairbanks, Morse"                       | Portable               | Kero'me<br>Electric       | 3      | 1200         | \$346 | 5'              | 77x34          |
| Hutchinson Mfg., Co., Norristown, N. J.....<br>"Lightning Woodworker"                | Portable               | Electric                  | 3      | 1150         | \$575 | 32"             | 6'x8'          |
| Knickerbocker Mfg. Co., Lansing, Mich.....<br>"Knickerbocker"                        | Portable               | Gas                       | 3      | 1067         | ..... | 36"             | 64½x1<br>41½   |
| Parks Ball Bearing Machine Co., Cincinnati, Ohio.....<br>"Planing Mill Special"      | Portable<br>Stationary | Gas<br>Electric           | 5<br>5 | 1600         | \$475 | 3'              | 4'10"<br>x9'6" |
| Ransome Concrete Machinery Co., Dunderhill, N. J.....<br>"Portable Woodworking Mill" | Portable               | Gas<br>Electric           | 3<br>3 | 1150         | \$355 | 38"             | 77" x<br>34"   |
| Sidney Machine Tool Co., Sidney, Ohio.....<br>"Famous"                               | Stationary             | Electric                  | 5<br>7 | 3500         | ..... | 35"             | 6'x8"          |
| James L. Taylor Mfg. Co., Poughkeepsie, N. Y.....<br>"The Taylor"                    | Portable               | Hand<br>Electric<br>Motor | 2<br>3 | varies       | ..... | varies          | .....          |
| Woodworker Mfg. Co., Detroit, Mich.....<br>"Master"                                  | Portable<br>Stationary | Gas<br>Electric           | 2-3    | 700          | \$130 | 32"             | 5'x3'<br>9"    |



## Where Disston Quality Is Born

There is something more than a proper mixture of metal put into the crucible when Disston steel is made.

It is an unseen, intangible ingredient—yet as big and real as the tremendous plant in which Disston Saws and Tools are made. The long experience of men whose fathers were Disston steel workers, whose grandfathers worked out the secrets of fine Disston steel generations ago—this is what has made the present quality of Disston steel.

Under the greatest test of all, hard service over a long period of years, the quality born in Disston steel is revealed. The greatest praise of Disston Saws and Tools comes from men who have used them longest, men who write of these tools with a friendliness, and even affection, seldom given to inanimate objects—and there could be no higher tribute.

Send for booklet on the selection, care, and use of Disston Saws, Tools, and Files.

HENRY DISSTON & SONS, Inc.

Philadelphia, U. S. A.



### A List of What Disston Makes

And in these Saws, Tools and Files is that quality found in

#### "The Saw Most Carpenters Use"

- Back Saws
- Band Saws for Wood and Metal
- Bevels
-  Buck Saws
- Butcher Saws and Blades
- Circular Saws for Wood, Metal, and Slate
- Compass Saws
- Cross-cut Saws and Tools
- Cylinder Saws
-  Drag Saw Blades
- Files and Rasps
- Grooving Saws
- Gauges—Carpenters' Marking, etc.
- Hack Saw Blades
- Hack Saw Frames
- Hand, Panel, and Rip Saws
- Hedge Shears
-  Ice Saws
- Inserted Tooth Circular Saws
- Keyhole Saws
- Kitchen Saws
- Knives—Cane, Corn, Hedge Knives—Circular for Cork, Cloth, Leather, Paper, etc.
- Knives—Machine
- Levels—Carpenters' and Masons'
- Machetes
- Mandrels
- Milling Saws for Metal
- Mitre-box Saws
- Mitre Rods
- One-man Cross-cut Saws
- Plumbs and Levels
- Plumbers' Saws
- Pruning Saws
- Re-saws
-  Saw Clamps and Filing Guides
- Saw Gummars
- Saw-sets
- Saw Screws
- Screw Drivers
- Screw-slitting Saws
- Segment Saws
- Shingle Saws
- Slate Saws—Circular
- Squares—Try and Mitre
- Stave Saws
- Sugar Beet Knives
- Swages
- Tools for Repairing Saws
- Tool Steel
- Trowels—Brick, Plastering, Pointing, etc.
- Veneering Saws
- Webs—Turning and Felloe

This is a partial list. There are thousands of items in the complete Disston line.

# DISSTON

## SAWS TOOLS FILES

## Pump Specifications

| NAME OF COMPANY AND TRADE NAME OF PUMP                   | Type   | H.P.  | Stroke Inches | Gal. per hour | Lift in Feet | Wt. Lbs. |
|--|--|-------|---------------|---------------|--------------|----------|
| Charter Gas Engine Co., Sterling, Ill. "Charter"         | Heavy Duty   | 6     | 8-10-12       | .....         | .....        | .....    |
|  |  | 8     | .....         | .....         | .....        | .....    |
|  |  | 10    | .....         | .....         | .....        | .....    |
|  |  | 12    | .....         | .....         | .....        | .....    |
|  |  | 16    | .....         | .....         | .....        | .....    |
| C. H. & E. Mfg. Co., Milwaukee, Wis. "C. H. & E."        | Bilge Centrifugal Portable Force, 4 Cylinder, etc. | 2     | .....         | 3000          | 20           | 650      |
|  |  | 7     | .....         | 6000          | 50           | 1650     |
|  |  | 3     | .....         | 12000         | 50           | 1025     |
|  |  | ..... | .....         | 900           | 20           | .....    |
| Contractors' Equipment Co., Keokuk, Iowa. "Packard"      | Mounted with Power Diaphragm (Single and Double)   | 3     | 3             | 3500          | .....        | .....    |
| Construction Machinery Co., Waterloo, Iowa. "Wonder"     | Diaphragm Mounted with Gas Engine                  | 2     | .....         | 4000          | 20           | 690      |
| Deming Co., The, Salem, Ohio. "Deming"                   | Diaphragm Mounted with Engine                      | 3½    | 3             | 3500          | 15           | 585      |
| Domestic Engine & Pump Co., Shippensburg, Pa. "Domestic" | Force  | 2     | 2½            | 600           | 150          | 850      |
| East Iron & Machine Co., The Lima, Ohio. "Van Wie"       | Centrifugal Mounted                                | 3½    | .....         | 18000         | 20           | 1000     |
| Humphries Co., The, Mansfield, Ohio. "Humphries"         | Mounted with Power                                 | 11    | .....         | 30000         | 20           | 1200     |
| Koehring Machine Co., Milwaukee, Wis. "Koehring"         | Steam  | ..... | 6-3-6         | 3000          | 22           | 4450     |

## Cement Block and Brick Machine Specifications

| NAME OF COMPANY AND TRADE NAME OF MACHINE   | Price  | Size of Block   | Capacity Day                | Tamper                        | POWER Kind H.P.    |
|---|--|---|-----------------------------|-------------------------------|--------------------|
| Anchor Concrete Machy. Co., Rock Rapids, Iowa. "Post Economy Punch" "Anchor Automatic Tamper" | \$3000<br>300                                  | 8x8x16<br>8x12x16   | 3000                        | Special Patented Punch        | Any 5              |
| Bragstad Con. Machinery Co., Canton, S. D.  | \$1350   | 8x10x24   | 300                         | Automatic Hammer Blow         | Gas 3½             |
| Benfer Mfg. Co., Cleveland, Ohio. "Mc Intyre"   | \$1250<br>3750                                 | 5x8x12  | 450 hr.                     | Automatic                     | Gas Electric 7     |
| Construction Machy. Co., Waterloo, Iowa. "Wonder"   | Tamper<br>per Brick:<br>Block<br>Brick<br>\$20 | 24x6x8 or 12<br>16x8x8-10-12<br>1000 block<br>2½x4x8½<br>10000 bricks | 1000                        | Special patent                | 1 H. P. needed     |
| W. E. Dunn Mfg. Co., Holland, Mich. "Dunn Tile Machine"                                       | \$500<br>\$1150                                | Tile: 8x8x12<br>6x16x12, 4x4x12                                       | 1000<br>2500                | Revolving Packer Head         | Gas Electric 5 7½  |
| J. B. Foote Co., Cincinnati, Ohio.  | 8x8x16, 8x10x16<br>8x12x16                     | .....   | .....                       | .....                         | .....              |
| Hayden Automatic Block Machine Co., Columbus, Ohio. "Hayden Automatic"                        | .....  | Down face<br>16, 20, 24   | .....                       | Power                         | Gas 1½             |
| The Helm Brick Machine Co., Cadillac, Mich. "Helm," "Premier," "Utility"                      | \$40 to<br>780                                 | 2½x12½x3½x8<br>Block:<br>4, 8, 12, 16x24                              | 1500 blocks<br>15000 bricks | Press: No Tamper used         | Gas Electric 5     |
| Hydro-stone Co., Chicago, Ill. "Hydro-stone"  | .....  | Block: 9x24, adjustable for all wall widths                           | 1200 blocks<br>1000 bricks  | Press with 1000 lbs. pressure | Gas Electric Steam |
| Ideal Concrete Machinery Co., Cincinnati, Ohio. "Ideal"                                       | .....  | Brick:<br>Standard<br>4"x8"x16" to<br>12"x8"x24"                      | 1000                        | Automatic Tamper              | Gas 3              |
| Miles Mfg. Co., Jackson, Mich. "Miles," "Singer," "King," "Colonial"                          | \$75 & up                                      | 4" to 24" long<br>4" to 8" high<br>4" to 12" wide                     | 250 up                      | Automatic                     | Gas Electric 1½    |



## Contractors! It is Profitable to Make Concretile Roofing

There is a constantly growing demand for Concretile Roofing in localities where plants have been established.

A large profit can be made from a plant making Concretile Roofing and success is assured to any company starting in the business, if enough capital is put in to equip a plant with the necessary machinery to place it in operation on a productive basis sufficient to meet the demand.

We furnish all the necessary equipment, including special forms and molds, for making Concretile. Send for our descriptive booklet about plants.

**Walter Concrete Machinery Company**  
Manufacturers of  
**Walter Concretile Roofing Machines**  
417 Saks Building - - - - - Indianapolis, Indiana

Partial list of 30 cities where Walter Concretile is manufactured:

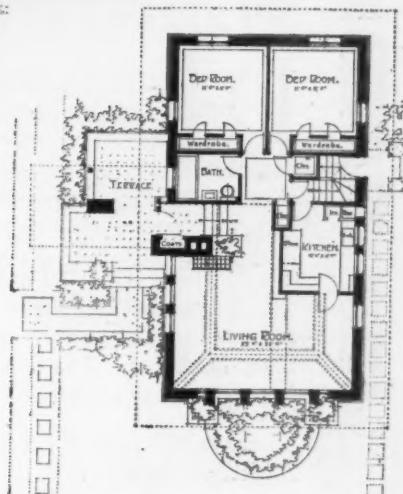
Camden, N. J.  
Cleveland, Ohio  
Indianapolis, Ind.  
Johnson City, Tenn.  
Lafayette, La.  
Miami, Fla.  
Manchester, N. H.  
Scottsbluff, Neb.  
Wilkes-Barre, Pa.

Write Walter Concrete Machinery Co., for their Street Address if interested in buying roofing-tile.



Russell Barr Williamson - Architect  
Milwaukee

You don't have to repair or rebuild when you use concrete. It is permanent and grows stronger with age.



#### PORTLAND CEMENT ASSOCIATION

|            |              |             |                 |                 |
|------------|--------------|-------------|-----------------|-----------------|
| Atlanta    | Detroit      | Los Angeles | Parkersburg     | San Francisco   |
| Chicago    | Helena       | Milwaukee   | Pittsburgh      | Seattle         |
| Dallas     | Indianapolis | Minneapolis | Portland, Oreg. | St. Louis       |
| Denver     | Kansas City  | New York    | Salt Lake City  | Vancouver, B.C. |
| Dos Moines |              |             |                 | Washington      |

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

### Cement Block and Brick Machine Specifications—Continued

| NAME OF COMPANY AND TRADE NAME OF MACHINE                         | Price          | Size of Block  | Capa-<br>ci-<br>tive<br>Day | Tamper              | POWER                       |           |
|---|----------------|--|-----------------------------|---------------------|-----------------------------|-----------|
|   |                |  |                             |                     | Kind                        | H.P.      |
| <b>Multiplex Con. Mach. Co., Elmore, Ohio.....</b><br>"Multiplex" | On Application | 8x8x16 to 12x16<br>4x8x16 to 12x20<br>4x8x16                 | 100 to 1800                 | Hand Lever Pressure | .....                       | .....     |
| <b>Viani Concrete Mould Co., Chicago, Ill.....</b><br>"Viani"     | \$35-290       | 6x12x8<br>6x12x12  | 300-1000                    | Hand Mechanical     | .....                       | .....     |
| <b>Wert Mfg. Co., Chicago, Ill. ....</b><br>"Perfect"             | \$950          | 8x8x16 and 10x12<br>Brick:<br>23/4x37/8x8<br>23/8x51/8x107/8 | 1000<br>blocks              | Grav ty<br>bricks   | Gas...<br>Electric<br>Steam | 21/2<br>1 |
| <b>The Willsea Works, Rochester, N. Y. ....</b><br>"Hercules"     | .....          | 16", 20", 24",<br>32", trimstore                             | .....                       | Anchor<br>Tamper    | Hand                        | .....     |

### Air Painting Machine Specifications

| NAME OF COMPANY AND TRADE NAME OF MACHINE                             | Size              |                             | Power                    |            | Area Cov-<br>ered from<br>one pos-<br>ition | Wt.                     | Type of Head   |
|---|-------------------|-----------------------------|--------------------------|------------|---|-------------------------|--|
|   | Paint Tank        | Air Com-<br>pressor         | Kind                     | H.P.       |   |                         |  |
| <b>Air Appliance Co., 62 Lake St., Chicago, Ill.....</b>              | 10-15             | 31/2 cu. ft.<br>per sec.    | Gas<br>Electric          | .....      | 25 ft.<br>hose<br>1000<br>sq. ft.           | .....                   | "Giraf"<br>Double<br>Regu-<br>lator for<br>2 Spray-<br>ers for<br>each<br>Tank |
| <b>De Vilbiss Mfg. Co., Toledo, Ohio.....</b><br>"Aeron"              | 7 gal.<br>13 gal. | 3" x 31/2"<br>41/2" x 41/2" | Gas...<br>or<br>Electric | 2-4        | 6000<br>sq. ft.                             | 000<br>220              | .....  |
| <b>Eclipse Air Brush Co., Newark, N. J. ....</b><br>"Eclipse"         | 5-15              | .....                       | .....                    | .....      | .....                                       | .....                   | .....  |
| <b>Paasche Air Brush Co., Chicago, Ill. ....</b><br>"Paasche"         | 4-8 &<br>20       | 3x31/2"<br>41/2x41/2"       | Gas<br>Electric          | 2-4<br>1-3 | 100 ft.<br>of<br>hose                       | 550<br>15000<br>sq. ft. | Special<br>pressure<br>Mani-<br>fold   |
| <b>Vortex Mfg. Co., The, Cleveland, Ohio.....</b><br>"Vortex Painter" | 20-30             | 22 ft.<br>per min.          | Gas...<br>Electric       | 4<br>5     | 1750  | .....                   | .....  |

### Gas Engine Specifications

| NAME OF COMPANY AND TRADE NAME OF ENGINE                                     | Type   | R.P.M.                   | Weight Lbs.               | Floor Space                      | Price        | H.P.                     |
|--|--|--------------------------|---------------------------|----------------------------------|--------------|--------------------------|
| <b>Associated Mfgs. Co., Waterloo, Iowa.....</b>                             | Portable Stationary                                  | 250-800                  | 345-3406                  | Varies                           | .....        | 11/4-25                  |
| <b>Baker Mfg. Co., Evansville, Wis. ....</b><br>"Monitor"                    | Vertical Stationary                                  | 500                      | 3.0                       | 20x24                            | \$75         | 11/4                     |
| <b>Charter Gas Engine Co., Sterling, Ill. ....</b><br>"Charter"              | Horizontal Stationary                                | .....                    | .....                     | .....                            | .....        | 20-175                   |
| <b>C. H. &amp; E. Mfg. Co., Milwaukee, Wis. ....</b><br>"C. H. & E."         | Kerosene Gasoline<br>Horizontal Vertical             | 400-650                  | 775                       | 30x32                            | .....        | 8                        |
| <b>Domestic Engine &amp; Pump Co., Shippensburg, Pa. ....</b><br>"Domestic"  | Portable Stationary                                  | 375-600<br>350-550       | 480<br>900                | 32x48<br>26x40                   | .....        | 2, 4,<br>other sizes     |
| <b>Fairfield Engine Co., Fairfield, Iowa.....</b><br>"Fairfield"             | Vertical Stationary<br>Portable Truck or Skid        | 900                      | 184                       | 163/4x26                         | \$190<br>230 | 41/2                     |
| <b>Fuller &amp; Johnson Mfg. Co., Madison, Wis. ....</b><br>"Fuller Johnson" | Stationary Portable                                  | .....                    | see catalog.              | .....                            | 18<br>25     | .....                    |
| <b>International Harvester Co., Chicago, Ill. ....</b><br>"International"    | Horizontal<br>Horizontal<br>Stationary<br>Stationary | 650<br>600<br>550<br>425 | 325<br>460<br>570<br>2215 | 48x26<br>54x29<br>54x40<br>90x56 | .....        | 11/4<br>3<br>6<br>10     |
| <b>Iowa Spreader &amp; Engine Co., Waterloo, Iowa.....</b><br>"Ever-Ready"   | Stationary and Portable                              | 275<br>500               | 200<br>2450               | .....                            | .....        | .....                    |
| <b>Nelson Bros. Co., Saginaw, Mich. ....</b><br>"Jumbo"                      | Horizontal Stationary                                | 450                      | 515                       | 27x38                            | \$100        | 3                        |
| <b>Stover Mfg. &amp; Engine Co., Freeport, Ill. ....</b><br>"Stover"         | Stationary Portable                                  | 550<br>525<br>500        | 220<br>300<br>375         | 19x30<br>21x30<br>34x231/2       | .....        | 11/2<br>2<br>other sizes |
| <b>United Engine Co., Lansing, Mich. ....</b><br>"United"                    | Horizontal Stationary                                | 450                      | 350                       | .....                            | .....        | 21/2                     |

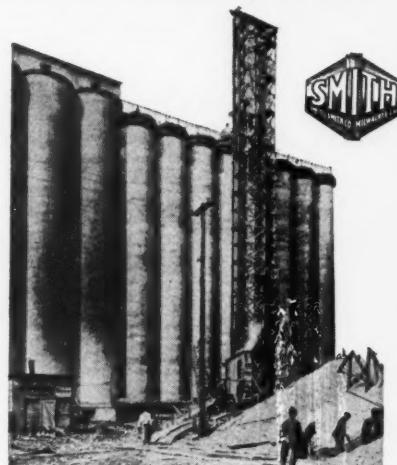
## Smith Mixers for Permanency

**H**EART'S DELIGHT FARM, Chazy, N. Y., has used Smith Mixers extensively with complete success. A half mile concrete dam, 38 feet high, was recently completed there. On large and small jobs, the manager of this model efficiency farm has found the Smith so practical that he wrote us: "We like the Smith Mixer very much and it is giving us perfect satisfaction in every way."

On the world's greatest, as well as on small jobs, Smith Mixers invariably make good. The mixing action is scientifically correct. The concrete produced by Smith Mixers is permanent concrete — the only kind that pays.

There is a Smith for every requirement. Find out about Smith equipment.

Also write for "Smith Snapshots"—a valuable, high class magazine featuring profitable, speedy production in construction.



Pennsylvania Elevators, Philadelphia, poured by Smith Mixers

## THE T. L. SMITH COMPANY

General Sales Offices and Factories: 1186 32d STREET, MILWAUKEE, WIS.  
Eastern Office and Warehouse: 50 CHURCH STREET, NEW YORK  
Western Warehouse: SAN FRANCISCO

## If Rip Van Winkle Had Built His Home of KELLASTONE

*Rip's home would be standing today, unaffected by time and weather—a veritable monument of man-made stone—had he built it of invincible*

# KELLASTONE

IMPERISHABLE STUCCO

**Does not contain a particle of lime, gypsum or portland cement**

KELLASTONE is a synthetic stone of science, the original, all-mineral magnesite stucco. Sets up with granite-like density, immune to heat, cold, fire and weather. Unquestionably the most economical and durable building material of the age.

KELLASTONE binds the outer walls into one seamless, inseparable, rock-like mass. Hermetically seals every joint and corner—makes a warm home in winter, yet cool in summer—reduces fuel bills, fire insurance and general upkeep.

Old houses, time worn or past fashion, can be transformed into modern architectural beauty by overcoating them with KELLASTONE. Easily applied—occupants not disturbed. The first cost is the last cost.

*Send for the KELLASTONE Sales Plan Book—32 pages of Authentic Facts and Figures Regarding the 1921 Outlook for Business in the Building World.*

**NATIONAL KELLASTONE COMPANY**  
*Manufacturers*

Room 515

155 E. Superior Street  
CHICAGO, ILL.



# KELLASTONE

IMPERISHABLE STUCCO

## Hoist Specifications

| NAME OF COMPANY AND TRADE NAME OF HOIST                    | Type  | H.P.               | Drum Capacity $\frac{3}{4}$ " Cable  | Weight Lbs.          | Lifting Capacity lbs. per Minute  |
|--|---|--------------------|--|----------------------|---|
| American Cement Mach. Co., Keokuk, Ia. "Boss"              | Mounted with or without power—reversible and non-reversible   | 6-20               | 700-1000   | 1000 up              | 1000-4000<br>100-175 ft.  |
| The Brown Clutch Co., Sandusky, Ohio. "Brown"              | Single drum—<br>Double drum—<br>Geared drum<br>Reversible   | 5                  | 2950   | 900                  | 2500<br>150 ft. per min.  |
| C. H. & E. Mfg. Co., Inc. Milwaukee, Wis. "C. H. & E."     | Electric—6 sizes<br>Gas engine—<br>Reversible   | 5-7½<br>10-15<br>7 | 500  | 2250                 | 1000<br>150 ft.   |
| Clyde Iron Works, Du-luth, Minn. "Clyde"                   | Reversible—<br>Boiler size—<br>Steam power  | 30                 | 2765   | 11700                | 7000<br>150 ft.   |
| Construction Machinery Co., Waterloo, Ia. "Wonder"         | Single drum—<br>Single reversible—<br>Single, non-reversible—<br>Double, reversible—<br>Belt driven | 7-9                | .....  | .....                | Depends on type   |
| Contractors Equipment Co., Keokuk, Ia. "Packard"           | Mounted and un-mounted with power—<br>Reversible and non-reversible                                 | 6                  | 700  | 2200                 | 1250<br>135 ft.   |
| Dake Engine Co., Grand Haven, Mich. "Dake"                 | Steam   | 7                  | .....  | .....                | .....   |
| Domestic Engine & Pump Co., Shippensburg, Pa. "Domestic"   | Single—double—<br>portable—stationary—reversible  | 4<br>6<br>9        | 1300 ( $\frac{1}{4}$ )<br>1000 ( $\frac{3}{2}$ )<br>1000 ( $\frac{3}{2}$ ) | 1650<br>2500<br>3500 | 1000<br>100 ft.<br>1600<br>100 ft.<br>2400<br>2400<br>180 ft.                 |
| The Erie Hoist Co., Erie, Pa. "Erie"                       | Mounted with or without gas engine—reversible or without power                                      | 8                  | .....  | 1750                 | 2000<br>75 to 100 ft.   |
| Havana Mfg. Co., Havana, Ill. "Havana"                     | Furnished with or without power—<br>Single drum<br>Reversible                                       | 4 to 10            | 1000 ( $\frac{3}{4}$ )<br>1000 ( $\frac{3}{2}$ )                           | .....                | 1000<br>100 ft.<br>2000<br>100 ft.  |
| O. K. Clutch & Mach. Co., Columbia, Pa. "O. K."            | .....   | .....              | .....  | .....                | .....   |
| J. E. Porter Co., Ottawa, Ill. "Porter"                    | Friction  | .....              | .....  | .....                | .....   |
| Chris. D. Schramm & Son, Inc., West-chester, Pa. "Schramm" | Single—double—<br>reversible—portable   | 4-5 to 14-30       | 750<br>1760  | 500<br>8850          | 1000<br>2800  |
| Union Gas Engine Co., Oakland, Calif. "Union"              | Mounted with gas engine   | 6<br>9<br>16       | 375<br>675<br>1250 ( $\frac{5}{8}$ )                                       | 2075<br>3400<br>4200 | 1200<br>100 ft.<br>1600<br>130 ft.<br>2400<br>150 ft.<br>1200-2000<br>125 ft. |
| Universal Hoist & Mfg. Co., Cedar Falls, Ia. "Ideal"       | Furnished with or without power—reversible and non-reversible—<br>Single—double                     | .....              | 500  | 340-500              | 1200-2000<br>125 ft.  |

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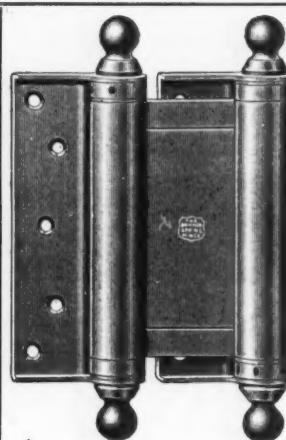
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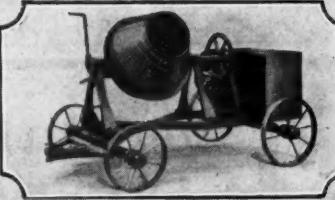
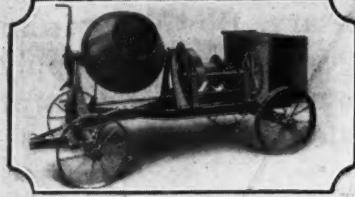
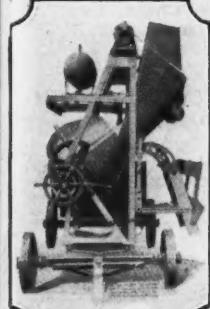
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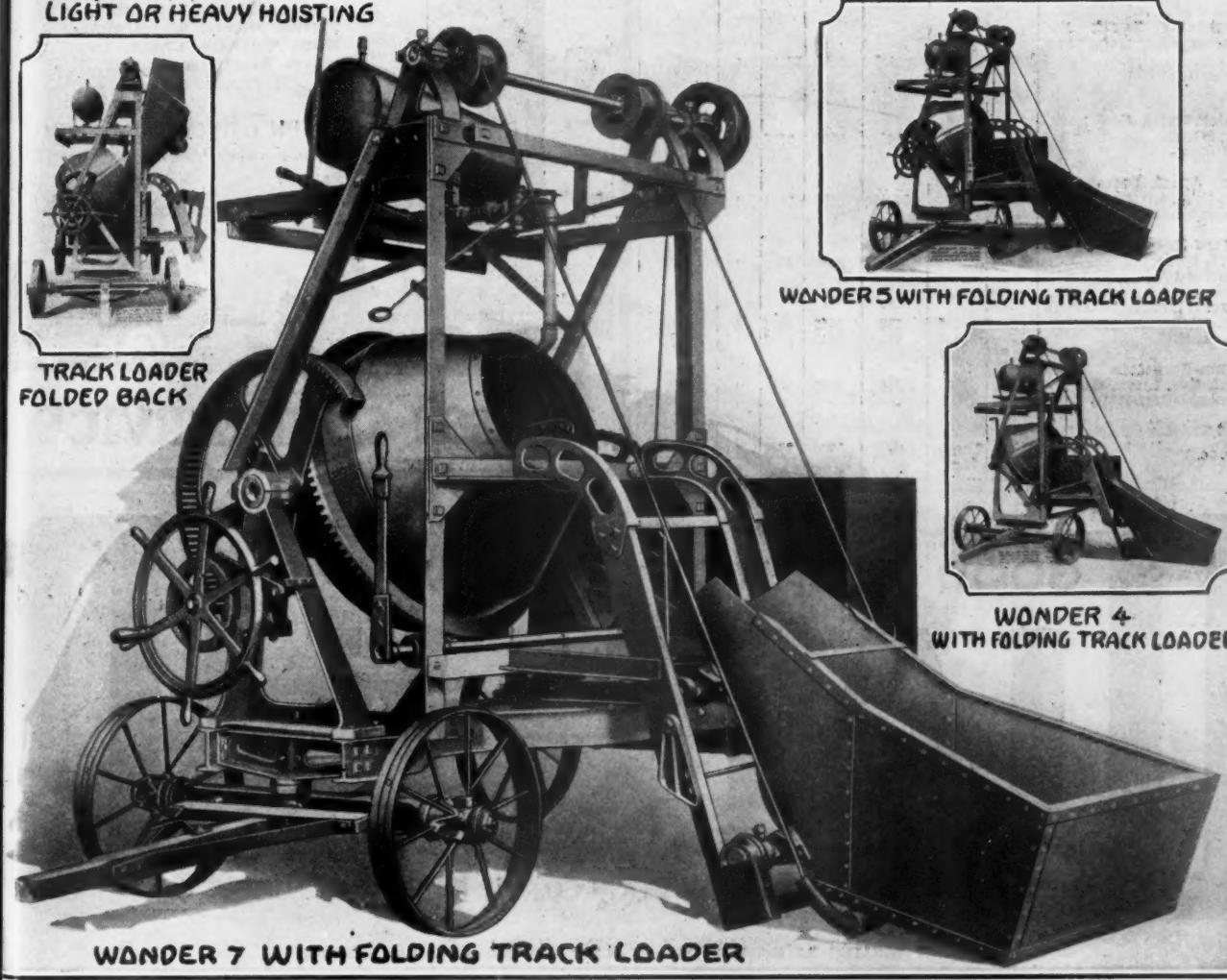
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WONDER 5 WITH FOLDING TRACK LOADER

WONDER 4  
WITH FOLDING TRACK LOADER

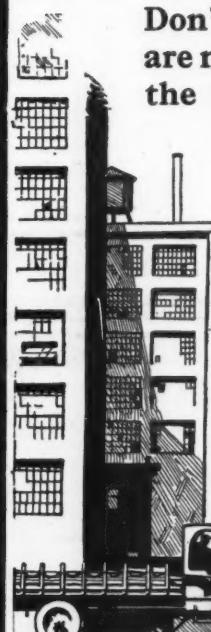
WONDER 7 WITH FOLDING TRACK LOADER

| NAME AND ADDRESS<br>OF COMPANY AND<br>TRADE NAME OF<br>TRUCK                | Price          | Capa-<br>city<br>Tons                      | Length<br>of<br>Wheel-<br>base<br>inches | Weight<br>Lbs. | POWER        |                | Turning<br>radius |
|---|----------------|--|--|----------------|--------------|----------------|-------------------|
|   |                |  |  |                | H.P.         | Cyl.           |                   |
| Aeme Motor Truck Co.,<br>Cadillac, Mich.....<br>"Aeme"                      | \$3050<br>5150 | 3/4-5                                      | 148-180                                  | 4750<br>8880   | 40-55        | 4              | 27'-32'           |
| O. Armleder Co., Cincin-<br>nati, Ohio.....<br>"Armleder"                   | .....          | 1-3 1/2                                    | 148-186                                  | 3900<br>6500   | 22.5         | 4              | 27'-30'           |
| Autocar Co., Ardmore, Pa.<br>"Autocar"                                      | .....          | 1 1/2-2<br>heavy<br>duty<br>other<br>sizes | 97<br>156                                | .....<br>28.9  | 18<br>4      | 37'-10"<br>42' | .....             |
| Bethlehem Motors Corp.,<br>Allentown, Pa.....<br>"Bethlehem"                | \$1695<br>4195 | 1-4  | 125-164                                  | 2715<br>6100   | 19.6<br>32.6 | 4              | 26'-29'           |
| Clydesdale Motor Truck<br>Co., Clyde, Ohio.....<br>"Clydesdale"             | .....          | 3 1/2                                      | 170                                      | 7170           | 32.4         | 4              | 28'               |
| Collier Motor Truck Co.,<br>Bellevue, Ohio.....<br>"Collier"                | .....          | 1-2 1/2                                    | 140-165                                  | 3810<br>5890   | 23<br>29     | 4              | 48'-53'           |
| Columbia Motor Truck<br>Co., Pontiac, Mich.....<br>"Columbia"               | \$2150<br>2850 | 1 1/2-2 1/2                                | 140-164                                  | 3800<br>4800   | 30<br>40     | 4              | 30'<br>35'        |
| Day-Elder Motors Co.,<br>Newark, N. J.....<br>"Day-Elder"                   | .....          | 1-5  | 128-170                                  | 3250<br>8250   | 55           | 4              | .....             |
| Dearborn Truck Co., Chi-<br>cago, Ill.....<br>"Dearborn"                    | \$2180<br>2500 | 1 1/2-2<br>2                               | 126<br>148                               | 3200<br>3500   | 30<br>35     | 4              | .....             |
| Denby Motor Truck Co.,<br>Detroit, Mich.....<br>"Denby"                     | \$2800<br>5350 | 2-5  | 144-170                                  | 3950<br>8590   | 32<br>39     | 4              | 30'-31'           |
| Dependable Truck and<br>Tractor Co., Galesburg,<br>Ill.....<br>"Dependable" | \$2950         | 2 1/2                                      | 157                                      | 5600           | 28.90        | 4              | 24'               |
| Duplex Truck Co., Lans-<br>ing, Mich.....<br>"Duplex"                       | \$2775         | 3000<br>5000                               | 145                                      | 3900           | 25.6         | 4              | .....             |
| Four Wheel Drive Auto<br>Co., Clintonville, Wis.<br>"Four Wheel Drive"      | \$4900         | 3  | 124-156                                  | 6000           | 36.1         | 4              | 25' 3"            |
| Garford Motor Truck Co.,<br>Lima, Ohio.....<br>"Garford"                    | \$5200         | 5  | 162                                      | 9350           | 40           | 4              | 60'               |
| General Motors Co., Pen-<br>ticton, Mich.....<br>"G. M. C."                 | .....          | 3/4-1-2-<br>3 1/2-5                        | 132<br>187                               | 2850<br>8645   | 19.6<br>32.4 | 4              | 23'<br>35'        |
| Gramm-Bernstein Motor<br>Truck Co., Lima, Ohio.....<br>"Gramm-Bernstein"    | \$1495         | 1-5  | 156                                      | 6900           | 50           | 4              | 31'               |
| Hood Tractor Co., Seattle,<br>Wash.....<br>"Hood"                           | \$1350         | Tow-<br>ing<br>Seat-<br>tle                | 60                                       | 3000           | 22.5         | 4              | 8                 |

| NAME AND ADDRESS<br>OF COMPANY AND<br>TRADE NAME OF<br>TRUCK     | Price          | Capa-<br>city<br>Tons   | Length<br>of<br>Wheel-<br>base<br>inches | Weight<br>Lbs.       | POWER                |      | Turning<br>radius |
|--|----------------|-------------------------|--|----------------------|----------------------|------|-------------------|
|  |                |                         |  |                      | H.P.                 | Cyl. |                   |
| International Motor Co.,<br>New York City.....<br>"Mack"         | \$3000<br>6000 | 1 1/2-7 1/2             | 144-180                                  | 4900<br>9100         | 25.6<br>40           | 4    | 50'-53'           |
| Independent Motor Co.,<br>Youngstown, Ohio.....<br>"Independent" | .....          | 1 1/2<br>2 1/2<br>3 1/2 | 140<br>150<br>160                        | 3900<br>4600<br>5400 | 22.5<br>27.2<br>32.4 | 4    | .....             |
| Iowa Motor Truck Co.,<br>Ottumwa, Iowa.....<br>"Bell"            | \$2750         | 1-1 1/2-<br>2 1/2       | 146                                      | 4500                 | 27.8                 | 4    | .....             |
| Kalamazoo Motors Corp.,<br>Kalamazoo, Mich.....<br>"Kalamazoo"   | \$2800<br>4300 | 1 1/2-2 1/2<br>3 1/2    | 144-601                                  | 5080<br>7600         | 22.5<br>28.9         | 4    | 22' 6"            |

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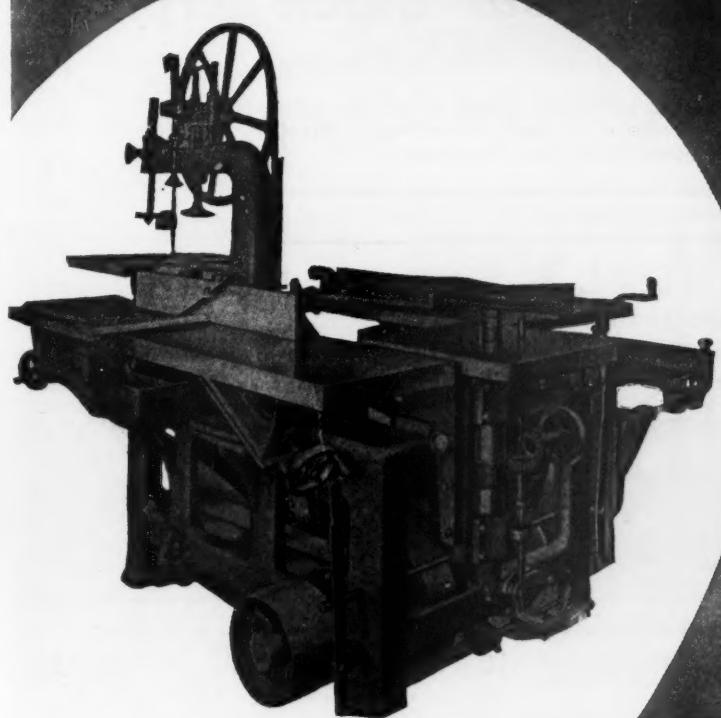


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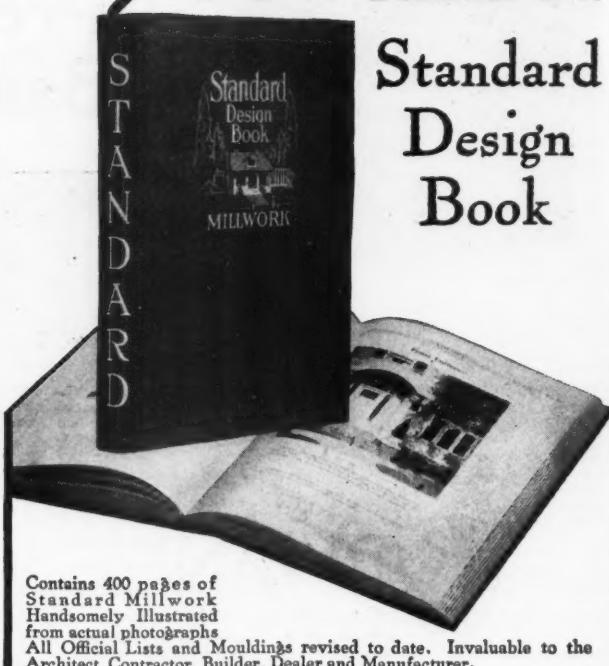
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SIDNEY, OHIO

## Motor Truck Specifications—(Continued)

| NAME AND ADDRESS<br>OF COMPANY<br>AND TRADE NAME OF<br>TRUCK   | Price                                  | Capacity<br>Tons        | Length<br>of<br>Wheel-<br>base | Weight<br>Lbs. | POWER<br>H.P. Cyl. | Turning<br>radius |
|--|--|-------------------------|--------------------------------|----------------|--------------------|-------------------|
| Kankakee Auto Co., Kankakee, Ill. .... "Kankakee"              | \$3175                                 | 2½                      | 170                            | 4500           | 29.4 6             | 50'               |
| Kentucky Wagon Co., Louisville, Ky. .... "Old Hickory"         | \$2175                                 | 1-1½                    | 135                            | 3600           | ..... 4            | .....             |
| Kissel Motor Car Co., Hartford, Wis. .... "Kissel"             | \$1585<br>2775<br>3475<br>4475<br>5085 | 1<br>1½<br>2½<br>4<br>5 | 140<br>152<br>168<br>180       | 3750<br>7900   | 24<br>28.9         | 4<br>25'          |
| Lewis-Hall Motors Corp., Detroit, Mich. .... "Hall"            | \$3275<br>5100                         | 2½                      | 12-13'                         | 6285           | 45                 | 4                 |
| Louisiana Motor Car Co., Shreveport, La. .... "L. M. C."       | \$2540                                 | 2-2½                    | 164                            | 4600           | 27.23              | 4                 |
| Menominee Motor Truck Co., Clintonville, Wis. .... "Menominee" | \$2080<br>5450                         | 1-1½<br>2-3½            | 130-160                        | 3300<br>6300   | 22.5<br>32.4       | 4<br>2'6"         |
| Mutual Truck Co., Sullivan, Ind. .... "Mutual"                 | \$3450<br>4150                         | 2-2½                    | 152                            | 6000           | 25.6               | 4                 |
| Northway Motors Corp., Natick, Mass. .... "Northway"           | \$3400<br>3500<br>4400<br>4500         | 2-3½                    | 146-178<br>160-185             | .....          | 25.6               | 4                 |
| Olds Motor Works, Lansing, Mich. .... "Oldsmobile"             | \$1500                                 | 1                       | 128                            | 2580<br>40     | 21.7<br>4          | 50'               |
| Packard Motor Car Co., Detroit, Mich. .... "Packard"           | \$3700<br>5550                         | 1-3<br>3-5<br>5-7       | 129<br>186                     | 5050<br>8650   | 28.1<br>32.4<br>40 | 24'<br>28'<br>31' |
| Parker Motor Truck Co., Milwaukee, Wis. .... "Parker"          | \$3600<br>4400                         | 2 yds.<br>3½            | 120<br>160                     | 5000<br>6550   | 40<br>45           | 20'<br>32'        |

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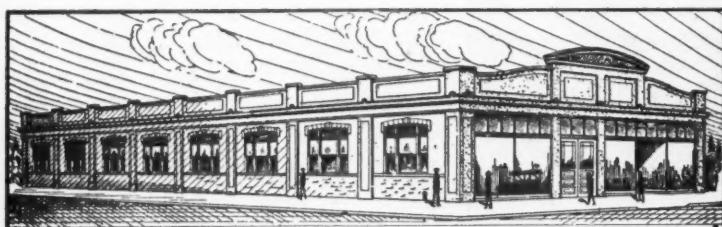
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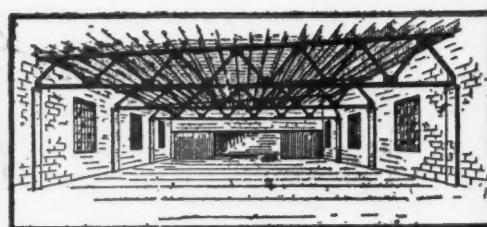
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Truly yours,  
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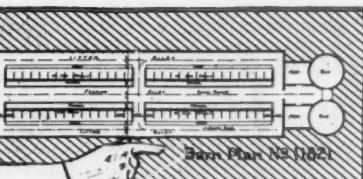
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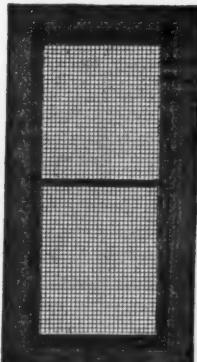
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## Motor Truck Specifications—(Continued)

| NAME AND ADDRESS OF COMPANY AND TRADE NAME OF TRUCK        | Price                          | Capacity Tons  | Length of Wheel-base inches            | Weight Lbs.                  | POWER H.P. Cyl.              | Turning radius |
|--|--------------------------------|--|--|------------------------------|------------------------------|----------------|
| Reliance Motor Truck Co., Appleton, Wis. "Reliance"        | \$2500<br>3200                 | 13 $\frac{1}{2}$ -2 $\frac{1}{2}$                          | 150-156                                | 4000<br>5200                 | 35<br>40                     | 4              |
| Reo Motor Car Co., Lansing, Mich. "Speed Wagon"            | \$1385                         | 2500   | 128                                    | 2560                         | 27                           | 4              |
| Republic Truck Sales Corp., Alma, Mich. "Republic"         | \$2975<br>3845                 | 23 $\frac{1}{2}$<br>33 $\frac{1}{2}$                       | 144<br>156                             | 4175<br>6360                 | 27.2<br>32.4                 | 4              |
| Service Motor Truck Co., Wabash, Ind. "Service"            | .....                          | 3 $\frac{1}{2}$ -5   | 137-<br>171 $\frac{1}{2}$              | 3470<br>8760                 | 22<br>48                     | 4              |
| Standard Motor Truck Co., Detroit, Mich. "Standard"        | .....                          | 1-5  | 134<br>176                             | 3466<br>8700                 | 22.5<br>36.1                 | 4              |
| Stewart Motor Corp., Buffalo, N. Y. "Stewart"              | \$2800<br>3850                 | 3 $\frac{1}{2}$  | 156-174<br>160-185                     | 4460<br>6060                 | 27.23<br>32.5                | 4              |
| Stoughton Wagon Co., Stoughton, Wis. "Stoughton"           | \$1995<br>2350<br>2800<br>3600 | 13 $\frac{1}{2}$ -2-3                                      | 130<br>140 $\frac{1}{2}$<br>155        | 3300<br>3800<br>4600<br>5900 | 22.5<br>up<br>25'<br>27'     | 4              |
| Traffic Motor Corp., St. Louis, Mo. "Traffic"              | \$1595                         | 2  | 132                                    | 3165                         | 22.5                         | 4              |
| Triangle Motor Truck Co., St. Johns, Mich. "Triangle"      | \$1650<br>2350<br>2700<br>2950 | 3 $\frac{1}{2}$<br>1 $\frac{1}{2}$<br>2<br>2 $\frac{1}{2}$ | 115<br>144<br>147<br>159               | 2600<br>3750<br>4200<br>4900 | 16.9<br>22.5<br>25.8<br>27.0 | 4              |
| Ward La France Truck Corp., Elmira, N. Y. "Ward La France" | \$3590<br>4090<br>5590         | 2 $\frac{1}{2}$ -3 $\frac{1}{2}$                           | 158<br>162<br>164                      | 6000<br>7700<br>9400         | 39<br>42<br>52               | 4              |
| Winther Motor Truck Co., Kenosha, Wis. "Winther"           | \$1795<br>5900                 | 1-7  | 135<br>162                             | 2700<br>8500                 | 19.6<br>40                   | 4              |
| White Co., Cleveland, Ohio. "White"                        | \$2600<br>3450<br>4500<br>5000 | 3 $\frac{1}{2}$<br>2<br>3-3 $\frac{1}{2}$<br>5             | 133<br>157 $\frac{1}{2}$<br>174<br>174 | 2950<br>4200<br>7075<br>7925 | 30<br>30<br>50<br>50         | 4              |
| .....  | .....                          | .....  | .....                                  | .....                        | .....                        | 28'<br>33'     |

**IF YOU DO NOT FIND  
WHAT YOU WANT**  
in the AMERICAN BUILDER, write  
us and we will try to get it for you.

How Many Board Feet in 68 Pieces, 2x4-14?

## DON'T figure Lumber by Pencil

Which is shorter, surer, SAFER?—  
to figure board feet laboriously by  
pencil, risking profits on an error—  
OR to take 10 seconds to  
find the RESULT in this book,  
a copyrighted "short cut" for lumber  
users. Given at a glance the number  
of feet in any number of pieces, an-  
dise. Send \$2.00 for this 106-page time  
saver. Use 5 days—if it's not worth to  
you three times its cost to you your  
money will be gladly refunded.

BENJAMIN L. JENKS, Publisher,  
1209 Marshall Building, Cleveland, OhioON  
**5-day trial - ONLY \$2.00**

There's beauty and durability and satisfaction for contractor, architect and owner in every brushful.

**NICE** TRADE MARK REG. U.S.A.  
EUGENE E. NICE  
VARNISHES  
WOOD FILLERS  
PAINTS, STAINS  
Prices, Samples, Literature on request  
Philadelphia

## Mr. Building Contractor:

Save men, money and time on that job by using Martin Trailers in your hauling.

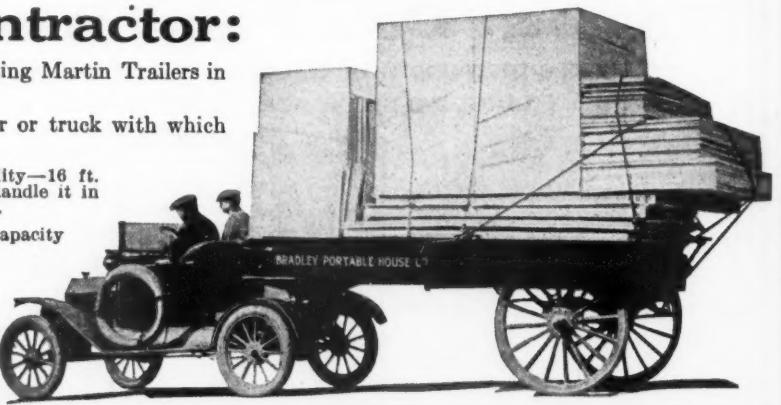
Martin Trailers treble the capacity of the car or truck with which they are used and cut hauling costs in half.

The trailer shown above will handle any commodity—16 ft. lumber, long pipe, cement, brick—anything—and handle it in any space where a small runabout can be handled.

Martin Trailers are made in all sizes from one ton capacity up to twenty tons. All trailers fully guaranteed.

Write for our 72-page catalog giving full particulars on our entire line of two-wheel trailers, four-wheel trailers and semi-trailers.

**Martin Rocking Fifth Wheel Company**  
Springfield, Massachusetts



## VAN GILDER DOUBLE WALL CO., Inc.

Including its Subsidiary Corporations is

### The Largest Building Organization in America

Founders of DOUBLE WALL Concrete Construction in 1908

25 Engineering Building

ROCHESTER, N. Y.



### The Reliable Scaffold Bracket

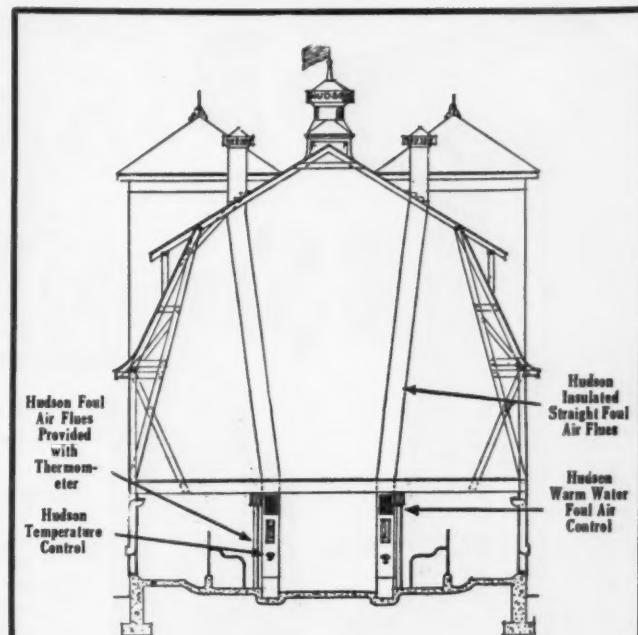
## This is the Bracket That—

1. Guarantees the Safety of your workmen.
2. Saves time—it goes up quickly—four ten-penny nails hang it and it
3. Comes down in a jiffy—lift off of the nails and drive them in.
4. Does not deface the siding.
5. When the job is done, can be folded up like an umbrella—for storage or transportation.
6. Is strongly made, reliable in service.

*Get prices now, from the*

**Elite Manufacturing Co.**  
Ashland, Ohio

*Order from your supply house  
or write us direct*



## Building Barns Like This Builds Your Reputation

You can have the expert advice of Hudson engineers on every job, without a cent of cost. Just drop us a line when you are figuring on a barn and Hudson experts will show you how you can best arrange the equipment to house the greatest number of cattle most conveniently and at the least cost.

Hudson furnishes everything for the barn but the lumber and nails.

We will gladly furnish free preliminary floor plans incorporating suggestions which will surely help you to land the job you are figuring on. Let Hudson work with you this year.

Send for our big new catalog showing the complete Hudson line, containing more than 2,000 items of interest to farmers. Send today.



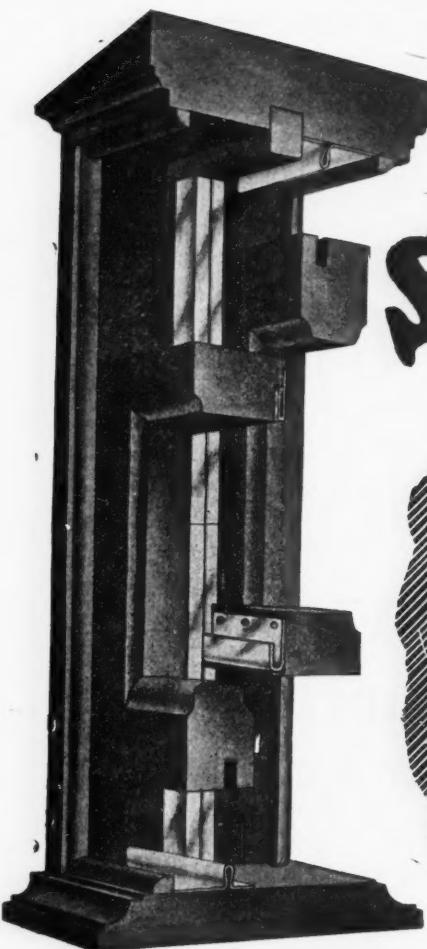
**HUDSON MFG. CO.**

Department 2510

General Offices: Minneapolis, Minn.  
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Omaha, Neb. DePere, Wis.  
Janesville, Wis. 111 Reade St.  
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**HUDSON**  
Barn Equipment



# Big Returns on a Small Investment

Every building owner who has installed

## SAGER METAL WEATHERSTRIPS

on his buildings is an enthusiastic booster for our product and those who have not are live prospects for the wide awake builder.

You will have no trouble in demonstrating the advisability and economy of these strips. They are the most practical, simple and economical strips on the market.

Write for agency proposition, booklet and prices at once.

**SAGER LOCK COMPANY**  
NORTH CHICAGO, ILL.

**SIMPLE**

**STRONG**

**EFFICIENT**

## FRANK MIXERS

are time and labor-savers—a batch a minute, no tilting or tipping—no slop over or spill—no waste.

### A Contractor's Best Investment

The logical machine for a busy builder—requires the minimum of attention—can be used on all jobs—mixes mortar or concrete easiest to charge or discharge.



### Low Cost and Upkeep

The extreme simplicity in the construction of Frank Mixers—the few working parts which are made of the best material—enables us to sell this machine at a price much lower than other complicated mixers. There is never anything out of order—their perfect simplicity and sound practicability demand the praise of contractors everywhere.

*Let us send you particulars*

**Frank Manufacturing Co.**

241 Century Building

DES MOINES, IOWA

## "'ANTI-HYDRO' Makes Cellars Dry and Keeps Them Dry!"

"We never knew what a real dry cellar was like until we used 'ANTI-HYDRO' for water-proofing concrete foundations and basement walls and floors.

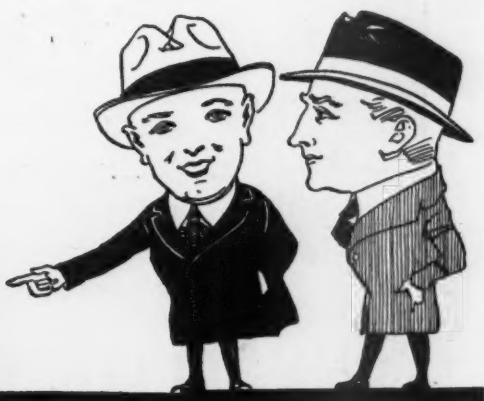
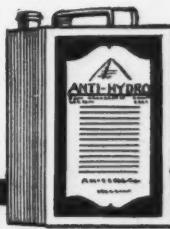
"The occupants of that house will never be troubled with a damp, leaky cellar. 'ANTI-HYDRO' has **permanently** water-proofed it."

For small jobs or large ones, "ANTI-HYDRO" will prove to be the best as well as the most economical concrete water-proofer and hardener you have ever used. Sixteen years of continuous use have established an unequalled record for "ANTI-HYDRO" permanence. Use it on your next job, whether small or large.

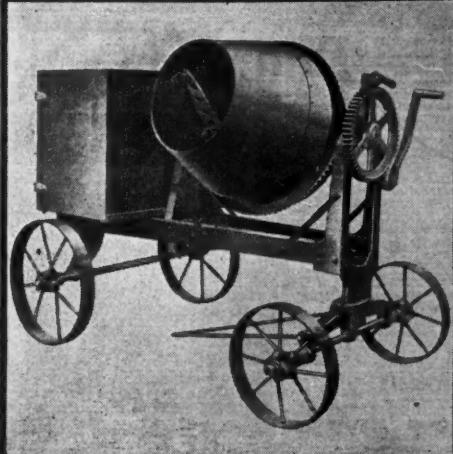
**ANTI-HYDRO WATERPROOFING CO.**  
299 BROADWAY · · · · · NEW YORK



One of a Group of Houses at Malba Estate,  
Malba, Long Island, N. Y.



Architect, Harold E. Padden  
Contractor, Arthur Waldron



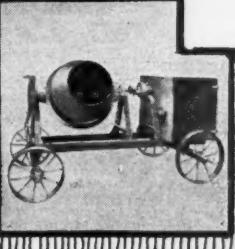
**20 Models**  
**5 Sizes**

**STEWART CONCRETE MIXERS**

**EXACTLY** the right mixer  
—at the price you want to pay.  
That's what the STEWART  
line of 20 models and five sizes  
enables you to select. And  
whichever one you choose will  
unfailingly deliver uninterrupted,  
economical, trouble-free service.

Complete stocks in most principal cities. Write today for complete descriptions and prices.

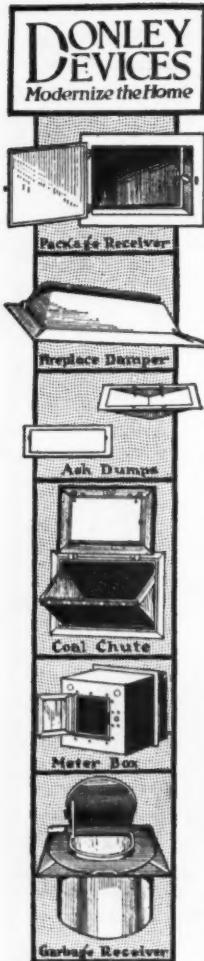
**Stewart Manufacturing Co.**  
157 Rath Street, Waterloo, Iowa



**SOLD ON THE SQUARE**



**BUILT ON THE SQUARE**



# What \$54.50 Adds to Any New Home

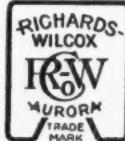
WIN back building prosperity by giving the home owner more for his money. For example, think what these things mean:

1. No bother about deliveries, day or night. Packages safe from damage or theft. No muddy feet in the kitchen.
2. Warm, clean, economical fires in the fireplace with draft under control.
3. No dust or odor from ash pits.
4. An efficient metal coal chute instead of the marred and broken coal window.
5. The meter man kept outside the building.
6. Clean, secure and inoffensive handling of the household garbage.

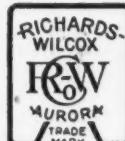
In medium sizes, all these five conveniences can be built into the new home for \$54.50. How else can the builder spend the same sum to yield anywhere near the same quick and lasting satisfaction?

Ask your building supply dealer for Donley Devices.

**THE DONLEY BROTHERS CO.**  
7400 Aetna Rd. Cleveland, Ohio



## Better Hangers for Garage Doors



Architects and builders—specify R-W garage door hangers for better appearance—greater convenience—longer life. The standard of America for all that means real satisfaction.

*Send for special catalogue—QA22*

**Richards-Wilcox Mfg. Co.**  
A Hanger for any Door that Slides.  
CHICAGO ST. LOUIS LOS ANGELES PHILADELPHIA — AURORA, ILLINOIS, U.S.A. — LONDON, ONT. BOSTON NEW YORK MINNEAPOLIS SAN FRANCISCO

WHEN THE JOB IS SPRAY-PAINTED it is done faster and better. The big advantage alike to the Contractor and the Customer, of painting done faster and better, is self-evident. This advantage to both comes through the use of the

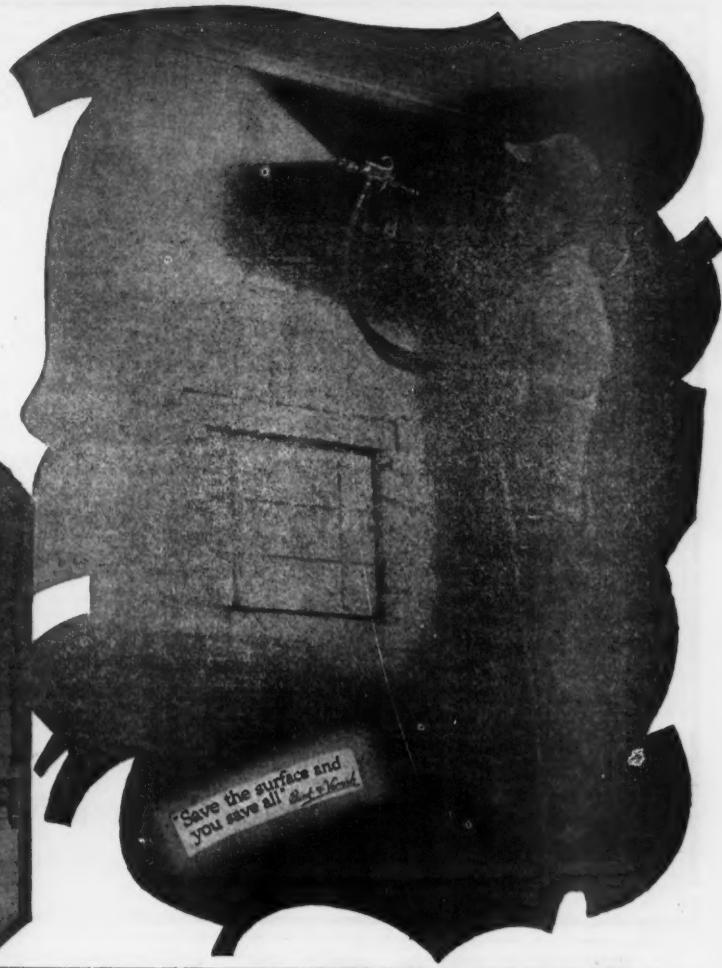
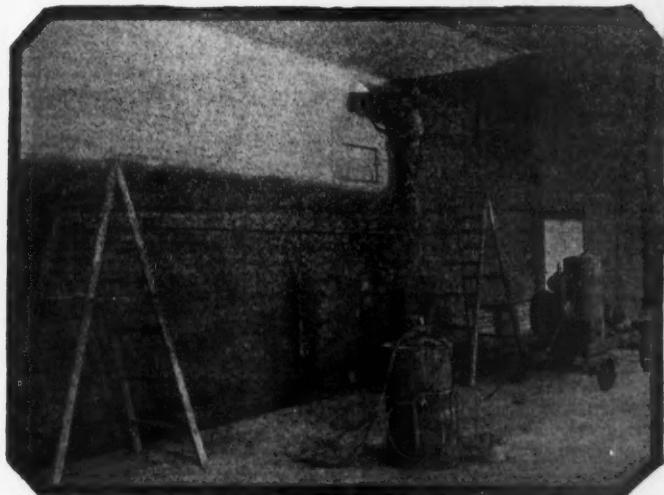


### Portable Painting Equipment

Nearly every kind of inside and outside job can be spray-painted with this modern, practical and reliable equipment.

Further particulars and a descriptive folder will be gladly mailed to you.

**The DeVilbiss Mfg. Co.**  
3676 Detroit Ave. Toledo, Ohio



## A Convenience It Will Pay You To Specify

The satisfaction your customers get from their homes has a very definite relation to your future business. Install the Kernerator, which burns household waste, in your next residence or apartment building and you'll add immeasurably to that satisfaction and to your client's comfort.

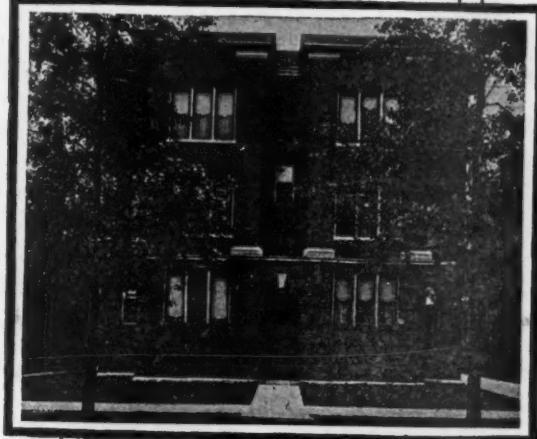
### KERNERATOR Built-in the Chimney

is built when the building is erected in the base of the chimney with a neat hopper door in the kitchen. Into it is thrown all refuse — tin cans, bottles, garbage, paper boxes, rags. The dry waste when burning dries the wet waste so it, too, can burn. No commercial fuel necessary so it does not cost one penny to operate.

**Sanitary — Economical — Convenient — Odorless**

See Page 1837 Sweet's 1920 Catalog

**KERNER INCINERATOR CO.**  
253 Lapham Street Milwaukee, Wis.

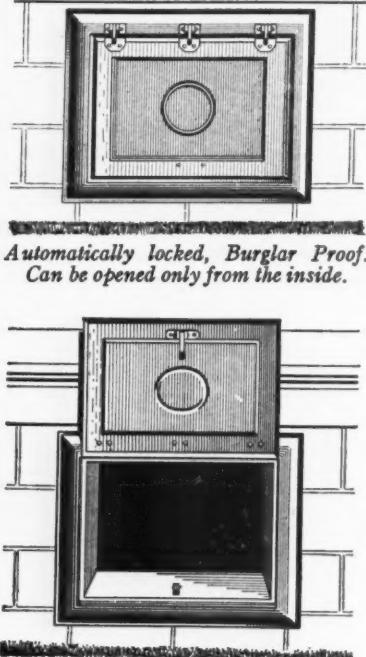


Equipped with Kernerator Apartment Building of Mark M. Leving, Chicago. Architect, Edw. F. Gilettie



Drop All Waste Here — Then Forget It

# Sykes Coal Door Stands The Strain



Automatically locked, Burglar Proof.  
Can be opened only from the inside.



YKES Coal Door is made of heavy pressed steel with malleable iron fixtures and is absolutely unbreakable.

It is neat in appearance and may be easily installed in new or old buildings. It replaces the unsightly broken window and marred wooden frame.

The door has been a big seller wherever shown. It is inexpensive and presents the most satisfactory solution of the coal door problem.

Write for further information. If a dealer, here is an article you can handle with satisfaction and profit.

**Sykes Metal Lath & Roofing Co.**  
504 Walnut Street, Niles, Ohio

# FRONT RANK

TRADE NAME

REGISTERED

## Burns Your Smoke

THIS is a front view of the FRONT RANK with the jacket off; note the large grate openings, fire brick lining of firepot, and roomy doors.

THIS is a rear view of the FRONT RANK with the jacket off; note the two tall cylinders which are the heat-traps, and the easily cleaned dust box.

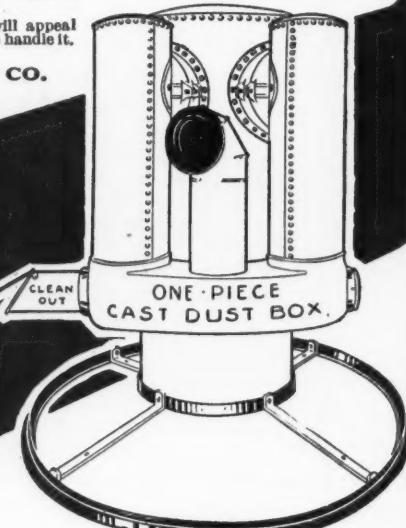
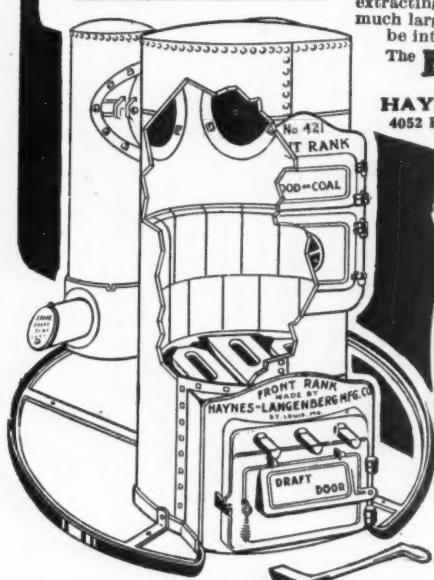
That is why it gives more heat for the fuel consumed than other furnaces do. The two heat traps between firepot and chimney prevent the heat from escaping up the chimney with the gases and give ample time for complete combustion of inflammable materials within the smoke, thus extracting full value from the fuel burned. The radiating surfaces are much larger than average, and vertically arranged so radiation cannot be interfered with by gradual coatings of dust.

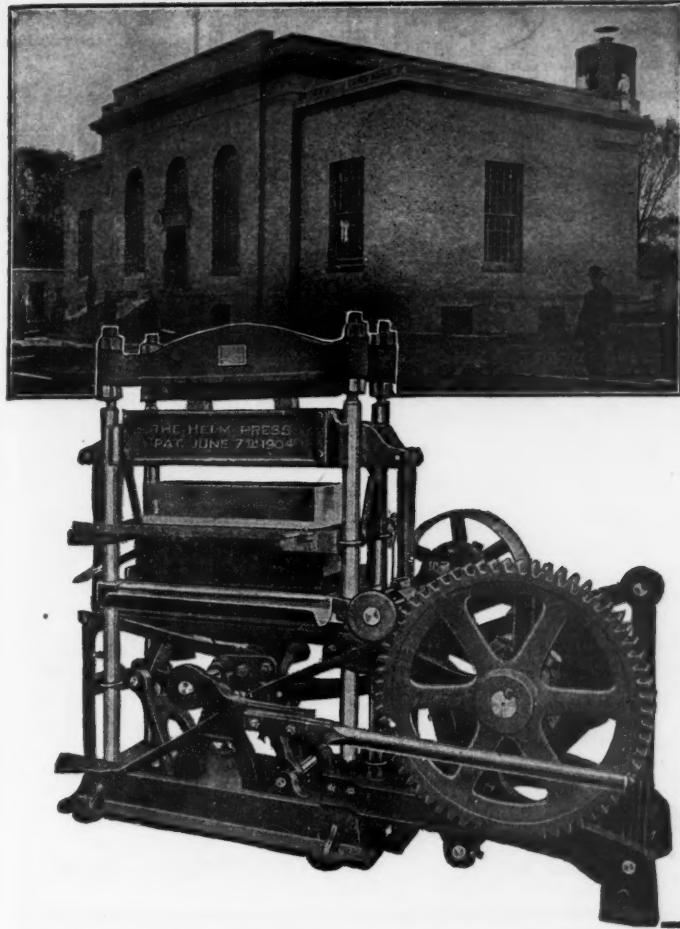
The **FRONT RANK** Pipeless Furnace is the furnace that will appeal to your prospects. It will pay you well to handle it.

Write for our literature and prices.

**HAYNES-LANGENBERG MANUFACTURING CO.**  
4052 Forest Park Blvd.

St. Louis, Mo.





## Take a Contract like this

Half a million Helm brick were used in this federal building in Mandan, N. D. The following excerpts from a letter show how satisfactory the material proved to be.

Geo. W. Stiles Construction Co., Mandan, N. D. "As contractors for the new Post Office, Mandan, N. Dak., we have used cement brick for backing up and found them very satisfactory. The small percentage of waste is a big item in their favor. On this building just finished the waste was less than one per cent. The government test on the cement brick used in this building was very satisfactory."

There is no reason why you can't provide the material for the homes, office buildings and farm buildings in your territory.

You have a superior product at a low price and will have no trouble in selling it at a good profit. The Helm dry wall construction is unsurpassed by any material.

If you are interested in starting a good business of your own, **WRITE FOR OUR BOOKLET.**

See us at  
Own Your Home Exposition, The Coliseum,  
Chicago, March 26 to April 2, booth 305

**THE HELM BRICK  
MACHINE COMPANY**  
772 Mitchell Street CADILLAC, MICH.

## EASIER TO INSTALL — NEVER NEEDS REPAIR

This new skylight construction is simple and easy to install—anyone can do it. Just screw the bars in place—slip in the glass, press down the lead flanges—and it is done—a labor saver—a time saver—and the skylight is there to stay as long as the building stands.

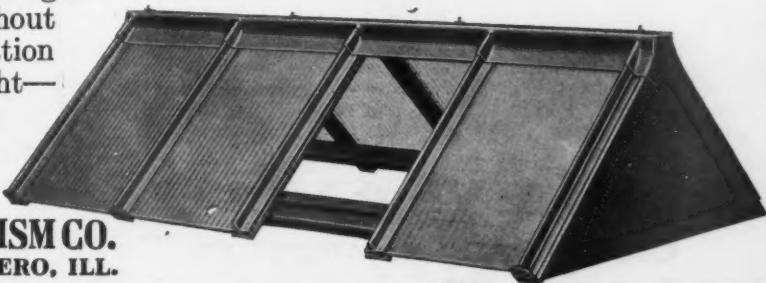
**STEELEAD**  
TRADE MARK REGISTERED

Made of steel "T" sheathed in a case of weatherproof pure lead. Never corrodes—never rusts. Absolutely weather tight—and holds glass securely yet without danger of breaking. Has condensation gutters. If you have a new skylight—a replacement—don't waste time on sheet metal—get Steelead.

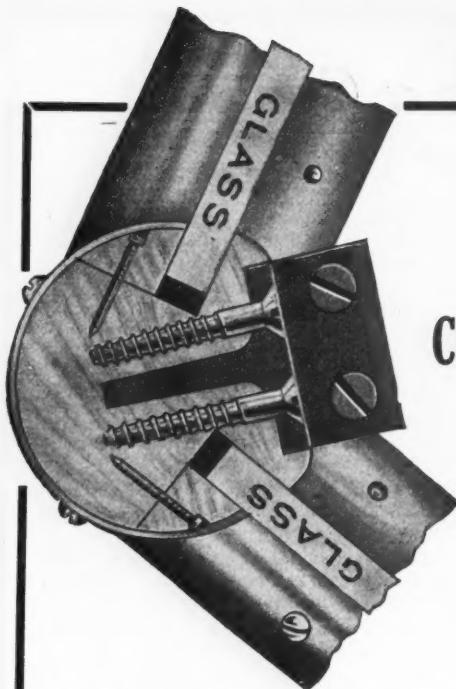
*Write for Prices*

**AMERICAN 3 WAY LUXFER PRISM CO.**  
1311 South 55th Street CICERO, ILL.

**Skylight Bars**  
**No Putty No Paint**  
**No Upkeep**



# DURABILITY—



Cross section showing corner post construction. Steel Tee forms a rigid backbone throughout the entire length of corner post; creosoted wood core encased in copper.

**Coulson** Store Front Construction means **attractive, substantial, durable** construction. It is a construction which architects do not hesitate to specify because of its efficiency and the installation of which contractors welcome because of its practicability.

## COULSON STORE FRONT CONSTRUCTION

Coulson Store Fronts are the beauty spots of every business street. They add much to the appearance of the building, are easy to install and provide wonderful display possibilities for the merchant.

Coulson Store Front Construction is built from creosoted wood encased in 18 gauge copper and reinforced throughout with steel tees with adequate provision made for awnings, drainage and ventilation.

It can be applied to any type of building with equal efficiency and satisfaction. Furnished all ready to set in place. Saves time for the architect and earns a comfortable profit for the builder.

Write today for our blueprints and illustrated catalog.

**J. W. Coulson & Company**

95-107 WEST SPRING STREET

Dept. A

COLUMBUS, OHIO

## Modern Closets for New Homes

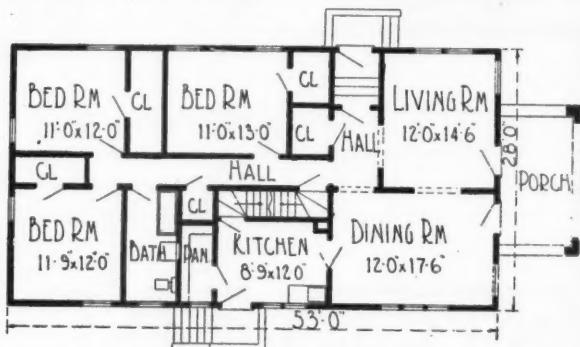
Thousands upon thousands of new homes will be built in this country within the next few months. Builders and contractors: save money in construction costs, and delight clients by specifying the

**KNAPE & VOGT**  
Garment Care System

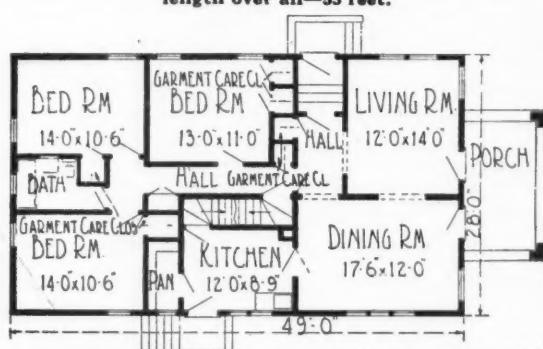
By building smaller and more compact closets (thus saving space and cutting down building costs, or adding to the size of each room) the Knape and Vogt Garment Carriers may be installed. These modern fixtures will accommodate more clothing in less space and keep the family wardrobe in perfect order. The cost of wiring, for electric lights, one large closet provides for this modern system of garment care.

Builders are not called upon for a large outlay of money. In fact, they actually save. Thousands now giving perfect satisfaction. Enthusiastically endorsed whenever seen. Look at the plans. Note the saving in space—and money. Let us show you how. Full information and co-operation cheerfully given.

**Knape & Vogt Mfg. Co.**  
GRAND RAPIDS, MICHIGAN



Old plan showing the usual, old fashioned closets, length over all—53 feet.



New plan with modern closets specified. Rooms same size length—49 feet.

**Make Money Out of Lightning Protection**

**Shinn-Flat**

## Lightning Rods Prevent Lightning Losses

A great many of the best Contractors and Builders in the country have written us in response to our large advertisement in the February number of this paper, asking how Shinn-Flat Prevents Lightning Losses and how Shinn Helps You Get the Business.

If you haven't the Shinn-Flat Agency, you have overlooked one of the best opportunities ever offered to you to make considerable extra income this spring and summer.

### Shinn Helps You Get the Business

Remember, this is not the ordinary sort of sales help we are offering you. We do more, we believe, than any other manufacturer ever thought of doing for his dealers.

We even go so far as to put our own factory salesmen right out into your field, selling Shinn-Flat conductors for you, and it doesn't cost you a cent. You even get all the profit on the sales we make.

### Shinn-Flat Business Is Good Now

Right now, when many lines of business are quiet, Shinn-Flat business is good. When building is brisk, you apply Shinn-Flat protection to all the buildings you construct. When the building business is quiet, you can turn your attention to installing Shinn-Flat on buildings already constructed but not yet protected, and earn the income necessary to bridge over the gap in your regular business.

You have an unusual opportunity right now to get into an independent business, on a small investment, that will yield very large profits. You will have behind you an organization of large man-power; composed of experts ready to help you make a success of the business. Our large staff of experienced representatives covers the United States and Canada.

You should get in touch with us at once. Write today. Get there first before your territory is closed.

**W. C. Shinn Manufacturing Co.**  
1228 Lytton Building CHICAGO, ILLINOIS

Was \$100  
Now \$64

## NEW OLIVER NINE FOR NEARLY HALF

This is the most startling typewriter offer of all! A brand new, latest model Oliver for \$64. The identical model formerly priced at \$100.00. We make it possible for you to save \$36 by our new way of selling, ways we learned during the war. We have found out that it is unnecessary to have great numbers of traveling salesmen and numerous, expensive branch houses throughout the country. We were also able to discontinue many other superfluous, costly sales methods. You benefit by these savings.

The Oliver Nine—our latest model—direct from the factory to you. It is the finest, the costliest, the greatest typewriter ever built. Used by the leading concerns.

Who would ever pay over \$64 again for a new typewriter? Especially when we not only make a new low price, but also give the lowest terms—about 13 cents per day—over a year to pay.



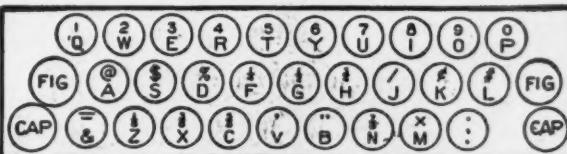
Over 900,000 Sold

STARTLING FACTS

### Contractors' Special

For contractors, our Special Oliver Nine is unbeatable. Besides being the best for ordinary correspondence, none can equal it for figure work. It has the characters you need, as shown on the keyboard herewith. And remember, carbon copies of everything written, for your records.

Our new price and terms ought to sell an Oliver to every contractor. Longhand writing will be out of date among progressive men.



### Free Trial—No Money Down

Just send for our amazing disclosure entitled "The High Cost of Typewriters—The Reason and the Remedy." Then ask for a trial. You are not put under the slightest obligation. It is our new-day way of selling. It saves money for both of us. You act as your own salesman—the Oliver itself must convince you. You pocket the \$36.

Send in the coupon below today for one copy of this sensational book that exposes the secrets of the typewriter world.

Canadian Price, \$32

### FREE BOOK



**THE OLIVER TYPEWRITER COMPANY,  
2403 Oliver Typewriter Bldg., Chicago**

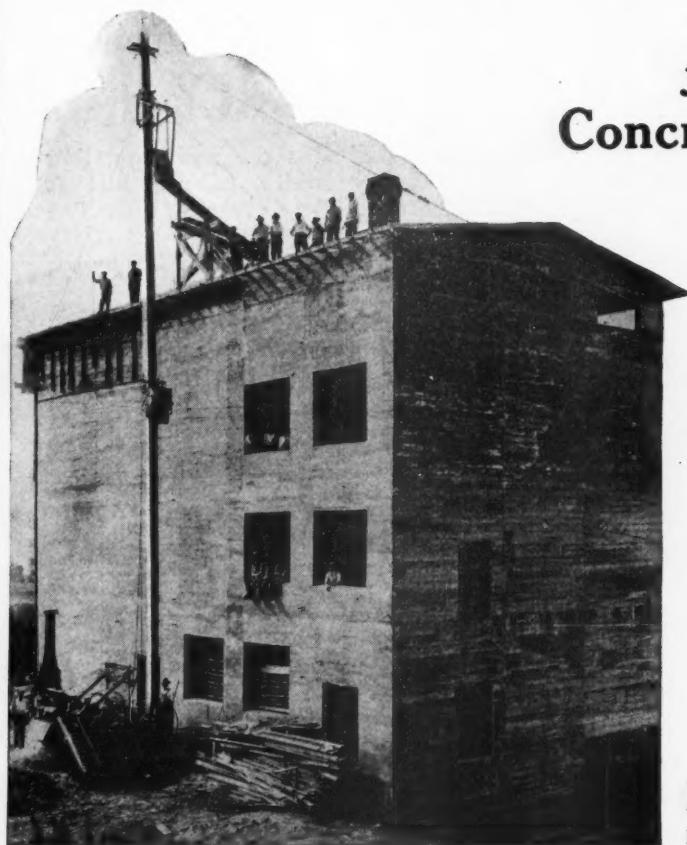
Mail me your book and further information—all free and without obligation to me.

Name \_\_\_\_\_

Street Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

## An Efficient yet Inexpensive Concrete Handling Plant



THE Insley Mast Hoist Bucket Plant places within the reach of the Contractor who is engaged in the construction of medium sized concrete structures, a set of elevating and placing equipment which fills a long felt want.

It consists of an automatic dumping bucket which runs on a built-up timber mast that is constructed by the user on the job. Being of reasonable first cost and low operating expense it is a set of equipment that you cannot afford to be without.

*Write for illustrated circular.*

**INSLEY MANUFACTURING CO.**

Engineers

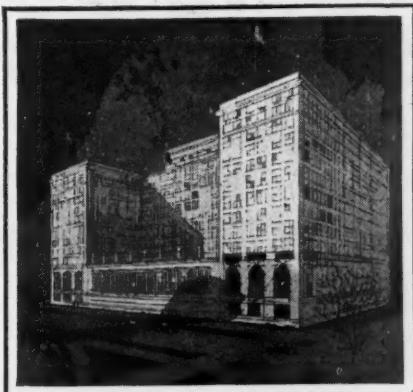
INDIANAPOLIS, IND.

Manufacturers

221



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



The Drake, Chicago

## KOHLER And CHICAGO'S NEWEST HOTELS

The established nation-wide preference for Kohler Enamelled Plumbing Ware is nowhere better indicated than in Chicago's newest hotels of the first class, The Drake, Hotel Webster, Hotel Somerset, Chicago Beach Hotel Annex and The Ambassador. For the furnishings and fittings of these hotels, the quality markets of America were drawn upon. And to emphasize comfort, luxury and utility in the bathrooms of these fashionable hostelleries, Kohler Enamelled "Viceroy" Built-in Baths were selected.

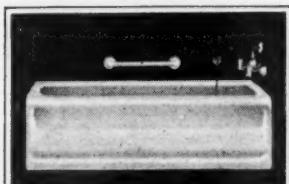
\* \* \*

If your file lacks that convenient book, "KOHLER of KOHLER," illustrating and describing in detail the Kohler Enamelled Plumbing Ware Products, kindly write

### KOHLER of KOHLER

Kohler Co., Founded 1873, Kohler, Wis.  
Shipping Point, Sheboygan, Wis.

BRANCHES IN PRINCIPAL CITIES

Kohler "Viceroy" Built-in Bath  
Recess Pattern

MANUFACTURERS OF ENAMELED PLUMBING WARE AND  
KOHLER AUTOMATIC POWER AND LIGHT 110 VOLT D. C.



## "Keep Your Eye on Jim!"

"It's not alone what a man does *during* working hours, but *outside* of working hours—that determines his future. There are plenty of men who do a good job while they're at it, but who work with one eye on the clock and one ear cocked for the whistle. They long for that loaf at noon and for that evening hour in the bowling alley. They are good workers and they'll always be just that—ten years from now they are likely to be right where they are today.

"But when you see a man putting in his noon hour learning more about his work, you see a man who won't stay down. His job today is just a stepping-stone to something better. He'll never be satisfied until he hits the top. And he'll get there, because he's the kind of man we want in this firm's responsible positions. You can always depend on a man like Jim.

"Every important man in this plant won out in the same way. Our treasurer used to be a bookkeeper. The sales manager started in a branch office up state. The factory superintendent was at a lathe a few years ago. The chief designer rose from the bottom in the drafting room. The traffic manager was a clerk.

"All these men won their advancements through spare time study with the International Correspondence Schools. Today they are earning four or five times—yes, some of them ten times as much money as when they came with us.

"That's why I say that Jim there is one of our future executives. Keep your eye on him. Give him every chance—he'll make good!"

Employers everywhere are looking for men who really want to get ahead. If you want to make more money, show your employer that you're trying to be worth more money. If you want more responsibility, show him you're willing to prepare yourself for it.

For 29 years the International Correspondence Schools have been training men and women right in their own homes after supper, or whenever they had a little time to spare. More than two million have stepped up in just this way. More than 110,000 are studying now. Ten thousand are starting every month. Can you afford to let another priceless hour pass without making your start toward something better? Here is all we ask—without cost, without obligation, mark and mail this coupon. It's a little thing that takes but a moment, but it's the most important thing you can do today. Do it now!

TEAR OUT HERE

## INTERNATIONAL CORRESPONDENCE SCHOOLS

Box 8138-B  
SCRANTON, PA.

Explain, without obligating me, how I can qualify for the position, or in the subject, before which I mark X:

|  |  |
|--|--|
| <input type="checkbox"/> ELECTRICAL ENGINEER       | <input type="checkbox"/> CHEMICAL ENGINEER                                 |
| <input type="checkbox"/> Electrician               | <input type="checkbox"/> Pharmacy  |
| <input type="checkbox"/> Electric Wiring           | <input type="checkbox"/> SALESMANSHIP                                      |
| <input type="checkbox"/> Electric Lighting         | <input type="checkbox"/> ADVERTISING MAN                                   |
| <input type="checkbox"/> Electric Car Running      | <input type="checkbox"/> Show Card and Sign Painting                       |
| <input type="checkbox"/> Heavy Electric Traction   | <input type="checkbox"/> RAILROAD POSITIONS                                |
| <input type="checkbox"/> Electrical Draftsman      | <input type="checkbox"/> ILLUSTRATOR                                       |
| <input type="checkbox"/> Electric Machine Designer | <input type="checkbox"/> Automobiles                                       |
| <input type="checkbox"/> Telegraph Expert          | <input type="checkbox"/> BUSINESS MANAGEMENT                               |
| <input type="checkbox"/> Practical Telephony       | <input type="checkbox"/> Private Secretary                                 |
| <input type="checkbox"/> MECHANICAL ENGINEER       | <input type="checkbox"/> Business Correspondent                            |
| <input type="checkbox"/> Mechanical Draftsman      | <input type="checkbox"/> BOOKKEEPER  |
| <input type="checkbox"/> Toolmaker                 | <input type="checkbox"/> Stenographer and Typist                           |
| <input type="checkbox"/> Ship Draftsman            | <input type="checkbox"/> Cert. Pub. Accountant                             |
| <input type="checkbox"/> Machine Shop Practice     | <input type="checkbox"/> Traffic Management                                |
| <input type="checkbox"/> Gas Engineer              | <input type="checkbox"/> Commercial Law                                    |
| <input type="checkbox"/> CIVIL ENGINEER            | <input type="checkbox"/> GOOD ENGLISH                                      |
| <input type="checkbox"/> Surveying and Mapping     | <input type="checkbox"/> Common School Subjects                            |
| <input type="checkbox"/> MINE FOREMAN OR ENGINEER  | <input type="checkbox"/> Railway Mail Clerk                                |
| <input type="checkbox"/> ARCHITECT                 | <input type="checkbox"/> STATIONARY ENGINEER                               |
| <input type="checkbox"/> Architectural Draftsman   | <input type="checkbox"/> Textile Overseer or Supt.                         |
| <input type="checkbox"/> PLUMBING AND HEATING      | <input type="checkbox"/> AGRICULTURE <input type="checkbox"/> Spanish      |
| <input type="checkbox"/> Sheet Metal Worker        | <input type="checkbox"/> Poultry Raising <input type="checkbox"/> Designer |
| <input type="checkbox"/> Navigator                 | <input type="checkbox"/> CIVIL SERVICE <input type="checkbox"/> Banking    |

Name \_\_\_\_\_

Present  
Occupation \_\_\_\_\_Business  
Address \_\_\_\_\_

1-1-21

Street  
and No. \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

Canadians may send this coupon to International  
Correspondence Schools Canadian, Ltd., Montreal, Canada.

I have been using one of your inside cup elevators for five years and like it fine, and would say that I have received the best treatment and most liberal terms. I can recommend the G. & D. Co. of Streator, Illinois, for fair and square dealings.

Respectfully,  
Geo. D. Oakes  
St. Anne, Ill. Route No. 2.

### Here's a tip for YOU

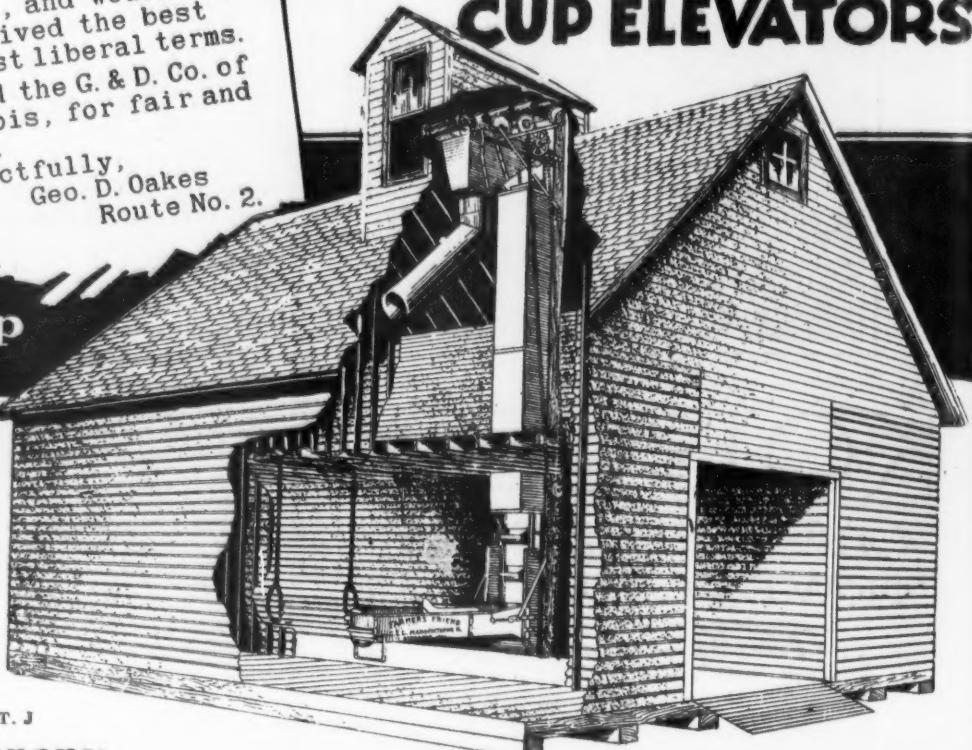
One satisfied customer like the writer of this letter will mean more profits for you. It PAYS to install the elevator that has stood the test of time.

We want you to investigate our proposition to the Builder, and will mail you our offer and catalog immediately on request.

WRITE TODAY DEPT. J

**G. & D. Mfg. Company**  
STREATOR ILLINOIS

# Farmers Friend CUP ELEVATORS



# DIAMOND HARD MAPLE FLOORING

There is no equal for service and beauty. It is the recognized hard wood for floors in residences and public buildings.

DEALERS—be sure that your stock of maple flooring bears the "DIAMOND HARD" trade mark.

You can recommend it to the most discriminating buyers.

Can load mixed cars with Hemlock and Pine Lumber, Lath, and Cedar Shingles.

*Write today for particulars.*

**J. W. Wells Lumber Co.**  
MENOMINEE,  
MICH.

DIAMOND  
HARD

DIAMOND  
HARD

**\$5.00**  
BRINGS IT  
TO YOU

# DO YOUR OWN LEVELING WITH YOUR OWN LEVEL



## Ten Days' Free Trial

Order the Aloe—try it for 10 days—put it to the most rigid tests. If you are not pleased, return it at our expense and your \$5.00 will be refunded.

### Sold On Easy Monthly Payments

Now you have the opportunity to own a strictly high-grade, accurate Convertible Level on Aloe's Easy Rental Purchase Plan—and without previous experience, or technical knowledge, you can put it to work so that it will make big money for you. Only \$5.00 brings it to you—then put it to every possible test. If you are pleased with it, pay the small monthly installments and the level is yours.

### Aloe Convertible Level

It is a combination transit and level, quickly converted to the use of either. It is absolutely accurate—satisfies the requirements of the most exacting contractors—yet is so simple that anyone, without technical education can use it. Sights above and below the horizontal can be taken. You can use it for leveling up foundations, walls, piers, running boundary lines, fences—in fact, a thousand and one jobs you meet every day that require an accurate level.

### You Learn To Use It In An Hour

No technical knowledge necessary. No previous experience is needed. With our simple and complete instruction book included free with every level, you can immediately put the instrument to work. It starts to pay for itself immediately and continues to be a permanent money-making investment.

### Write For Free Book

It tells you how to increase your income, how to get the profitable jobs and become a bigger man in your community. Don't doubt or delay—write for this book at once.

### A. S. ALOE CO.

621 Olive St.,  
St. Louis, Mo. U.S.A.

FREE  
Write  
for  
This  
Book

### MAIL COUPON TODAY

A. S. ALOE CO. 621 Olive St., St. Louis, Mo.  
Without obligation, send me your free book, "Be A Bigger Builder". Also full particulars about the Aloe Convertible Level and details of your easy payment plan.

Name .....

Address .....

## Special Notice

Do not cut hole in the wall or make arrangement for outside icing refrigerator until you get Herrick complete plans and instructions. You can save your client money and yourself prestige, time and trouble by knowing exactly how and where to place the opening. Herrick plans sent free to Architects and Builders.

**Home Builders.** If your architect or contractor can not furnish this information write to us giving their name and address.



The "HERRICK" Waterloo Iowa - Outside Icing

# HERRICK

## The Refrigerator of Interest to all Builders

The Herrick refrigerator is of especial interest to the Builders—because, by reason of its built-in construction, he is the logical man for the job.

Every modern house must sooner or later have a refrigerator and the Builder is in position to make it a Herrick at a substantial profit both in the sale and the installation.

### EASY TO SET IN PLACE

The Herrick has individual features that make it desirable in all cases.

**Outside Icing.** This appeals to the housewife. Keeps the muddy footed ice man out on the porch.

**Herrick System of Dry Air Circulation.** Maintains the atmosphere in the ice box that is just as dry and pure as in a room. And requires no ice in cold weather.

**Herrick Service Helps You.** Answers your refrigerating problems and provides FREE PLANS and selling helps.

*Don't put off writing  
our catalog and details of our  
selling services.*

**Herrick Refrigerator Co.**  
Waterloo, Iowa



# DO IT WITH AIR

## *The Old Way Costs Too Much*

The waste of both time and paint where brush work is used is more than you would imagine.

With a Paasche Air Brush you can paint with ease and speed anything from an office chair to an automobile and get a better job.

The air DRIVES the paint into the pores of the wood or other surface to be painted. Air driven paint is on to stay.

By the pressure of the finger on the trigger you can regulate the spray from a hair line for fine work to a big wide spray that will cover the side of a house or barn in a hurry.

### YOU SHOULD SEE THIS BRUSH

Our catalog illustrates every detail of the Air Brush and its work.

WRITE FOR IT

*Paasche Air Brush Co.*

1230 W. Washington Blvd.  
Chicago, Illinois

# “YANKEE” TOOLS

## PUSH DRILL No. 44

*Saves Time at Every Turn.*

Here you have a rapid fire drill, with adjustable tension for hard or soft woods and the 8 different size Drill Points furnished with it.

A turn of the cap does the trick that saves time, labor and Drill Points. This drill is about as valuable to the average mechanic as any “Yankee” Tool we make. Built for hard service. Your dealer can supply.

**Send for the “Yankee” Tool Book  
A postal will do**

**NORTH BROS. MFG. CO.**  
PHILADELPHIA, PA.



## Have you the tool which should be in his hands?

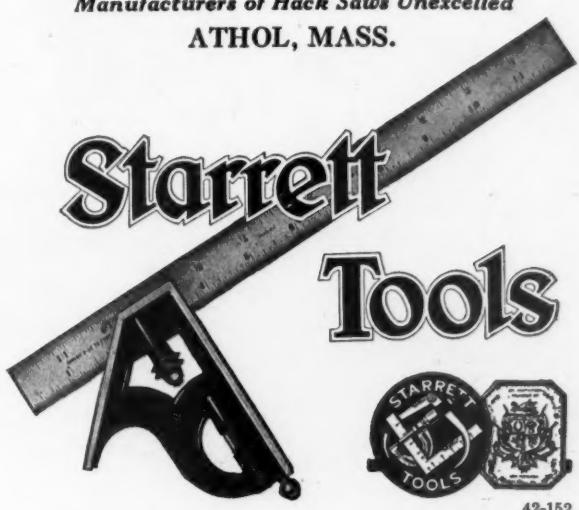
Among the Starrett Tools for carpenters and builders there are four Starrett Combination Squares—each of which render a five-fold service. Each square combines a rule, square, miter, bevel, depth and height gage.

Two of these combination tools—one of which this man should be using—are designed especially for large, heavy work.

Have you the missing tool? It is shown in Starrett Catalog No. 22 "6." Ask your dealer for a copy or write us; it's sent free on request.

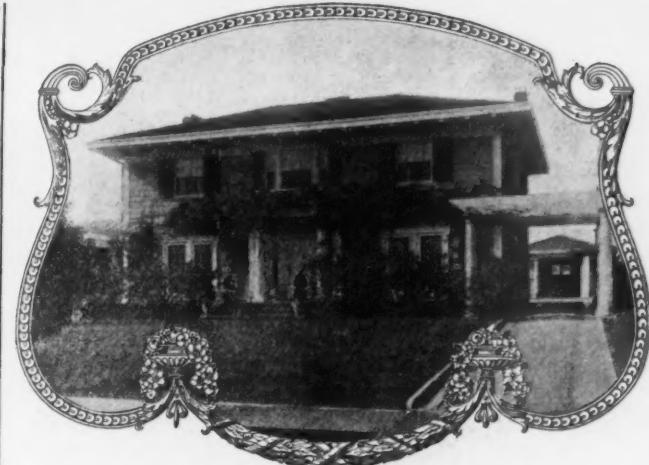
### THE L. S. STARRETT CO.

*The World's Greatest Toolmakers*  
Manufacturers of Hack Saws Unexcelled  
ATHOL, MASS.



42-152

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



## What's under the Paint?

The permanent beauty of any wooden house depends primarily on the lumber used. If it is hard in some spots, and soft and spongy in others, if it has streaks of sapwood or "bleeds" pitch here and there, it is almost impossible to give it a painted surface that will look well—and stay looking well. In a short time it gets "spotty." Where it gets "spotty" there is shrinking, swelling and warping. Decay begins.

In a few years repairs become necessary. The value of the house shrinks as the soundness of its sidings, porch posts and columns, railings, gutters, window frames, eaves, roof, water tables and other parts, constantly exposed to climatic changes and moisture gradually deteriorate.

Architects fully appreciate the necessity for a careful selection of kinds and grades of wood to be used. No wood meets all requirements for all purposes. Hard wood is best for some uses, soft wood for others. For exteriors, paint holding qualities and resistance to rot are extremely important.

Redwood possesses both these qualities to a remarkable degree. Every fibre is impregnated with a preservative which guards it against rot and decay. It has a uniform cellular structure which provides paint-tenacious surfaces. It is free from pitch and other resinous substances. Redwood is also remarkably free from knots, splits, sapwood, worm holes and other blemishes. It is straight grained and of uniform texture.

Properly dried, Redwood shrinks, swells and warps less than any wood you can specify. It will resist the action of the elements longer-painted, stained or unfinished.



*Rot and decay start under porch columns, porch posts and flooring, exterior siding eaves, gutters, door and window frames, rails, roof or side shingles, mud sills—wherever there is exposure to earth, air or water. Use Redwood.*

### TECHNICAL DATA ON REDWOOD

The three Redwood Information Sheets listed below should be in your files. They will be supplied gladly by our Chicago office. Write for them today.

"Residential Building Materials."  
"Industrial Building Materials."  
"Farm and Dairy Buildings and Equipment."



**The Pacific Lumber Co.**  
OF ILLINOIS  
**REDWOOD**

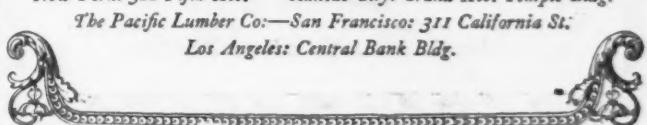
*The Largest Manufacturers and Distributors of California Redwood*

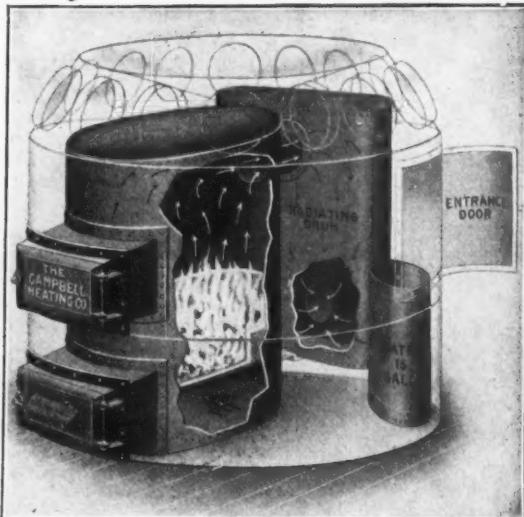
**1106 LUMBER EXCHANGE BLDG., CHICAGO**

New York: 522 Fifth Ave. Kansas City: Grand Ave. Temple Bldg.

The Pacific Lumber Co.—San Francisco: 311 California St.

Los Angeles: Central Bank Bldg.





## Remarkable Service

The Campbell Furnace is built to fit your house. Every angle, every joint is accurately arranged to give greatest possible service with least possible fuel. An all-steel heater that is gas, smoke and dirt tight. Guaranteed to heat your home to 70 degrees in the coldest, windiest weather. Over 35,000 satisfied people will verify this statement. Homes fitted with

### WINTER CAMPBELL'S CHASER

are *clean* homes. Special features are the Giant Water Battery holding from 15 gallons to two barrels of water,—a source of moist air, and an equalizer of heat. Rotary air movement changes air in room several times an hour. Warms floor same as ceiling. Be sure to

### Write for Campbell's Book on Home Heating

also sketch pamphlet, etc.

If a dealer, write us for our liberal proposition and splendid sales helps.

### Campbell Heating Co.

Department A.

Des Moines, Iowa.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

# ACME

## Rock-Bottom Haulage Costs

We're down to brass tacks now. High transportation costs find no place in business today.

The close scrutiny of competition forces the utmost economies in production and distribution. That means rock-bottom haulage costs—and that means Acme Trucks.

Acme Trucks haul dependably and economically. In the minds of Acme owners there is no question about that. In every industry, and under every condition of service, Acme Trucks make money for their owners by saving it.

The sturdy proved units and Acme proved construction enable these trucks to operate continuously, and at a high level of efficiency, over long periods of time. Repair costs on Acme are uniformly small. Running costs are as low as the most expert engineering can make them.

If you haul anything investigate the Acme. It is decidedly worth your while. We will gladly send you complete information.

Built in  $\frac{1}{2}$ , 1,  $1\frac{1}{2}$ , 2,  $3\frac{1}{2}$ , and 5-ton models.

**Acme Motor Truck Company**  
411 Mitchell St., Cadillac, Mich.

On the radiator of every Acme  
is this seal of dependable  
performance

A  $1\frac{1}{2}$  Ton Acme Truck  
owned by  
Walter Gouldthorpe of  
Monroe, Va.



Trade mark registered  
U. S. and other  
countries.





## Old Buildings Easily Modernized

THERE are countless numbers of old buildings in which the frame work, joists, studs, foundations, etc., are in excellent condition, yet they are of little value because of the dilapidated exterior condition.

Stucco on Hy-Rib Metal Lath will quickly transform such buildings into modern, fireproof structures and will greatly increase their value.

Hy-Rib Metal Lath insures successful stucco and plaster work, because it thoroughly reinforces the stucco or plaster—cracking is prevented and permanence assured. Economy, fire resistance, freedom from vermin, elimination of frequent painting, and low upkeep cost are a few of the advantages resulting from Hy-Rib Metal Lath construction.

Hy-Rib Metal Lath is furnished in various types and weights, so as to meet every practical requirement. Used successfully in walls, floors, partitions, ceilings, roofs, etc. The complete Hy-Rib line includes metal lath, studs, corner beads, etc.

The big 64-page Hy-Rib book sent free on request.

### TRUSCON STEEL COMPANY YOUNGSTOWN, OHIO

WAREHOUSES AND SALES  
OFFICES IN PRINCIPAL CITIES  
Reinforcing Steel, Metal Lath, Steel Windows, Steel  
Buildings, Pressed Steel, Cement Tile, Etc.



Residence of Arnold Kaichen, Cincinnati, Ohio  
An Old Wooden House Transformed into a Modern, Permanent  
Residence by Overcoating with Hy-Rib Lath and Stucco

An old  
frame  
building  
before  
being  
"overcoated"  
with stucco

Same building  
with stucco over  
HY-RIB



## At the Mercy of the Coal Hauler?

Not if the coal cellar is equipped with a **Leavitt Coal Chute**

Your fore thought in protecting the foundation and woodwork of the buildings you erect will forestall dissatisfaction. Nothing is so disappointing to the owner of a nice residence as having the window frames battered by careless coal handlers.

## Install Leavitt Coal Chutes

The Leavitt Coal Chute has no glass to break, no hinges to bother. It may be locked from the inside, which makes it burglar-proof. The Leavitt Chute has a larger cross section for getting coal into the building, than the average chute, being 20x22 inches in size. This neat, substantial chute offers permanent protection, and helps to give a building the appearance of having been finished right, to the last detail. Made in styles to suit every requirement.

### Stop Coal Window Troubles

Specify Leavitt Coal Chutes on your buildings, with the assurance that there will never be a complaint arising from your coal cellar windows. When you think of Coal Chutes think of LEAVITT.

Write for free circular

**Leavitt Manufacturing Co.**  
366 Griggs St. Urbana, Illinois

Other Leavitt Items  
Building Should Know

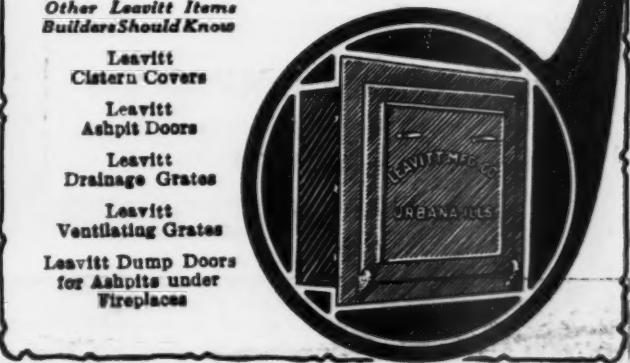
Leavitt  
Cistern Covers

Leavitt  
Ashpit Doors

Leavitt  
Drainage Grates

Leavitt  
Ventilating Grates

Leavitt Dump Doors  
for Ashpits under  
Fireplaces





## The Plane of Dependable Service

The Sargent Auto-Set Bench Plane is not only attractively finished—it is good all through. You can depend on it for many, many years of reliable service.

The blade can be removed, whetted and replaced in exactly the same position without re-adjustment. Send for the Sargent Book of Planes.

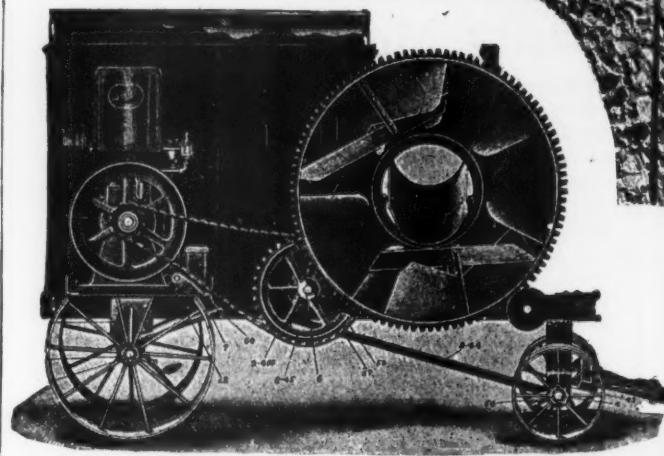
## SARGENT STEEL SQUARES

The markings on the Sargent Steel Framing Square make it possible to get the length and cut of Hip, Valley, Jack or Common Rafters at once, without calculating on the part of the carpenter. Booklet on request.

**SARGENT & COMPANY**  
Hardware Manufacturers  
51 Water St. New Haven, Conn.

**SARGENT**  
LOCKS AND HARDWARE

**NEW WAY  
MAKES JOBS  
PAY**



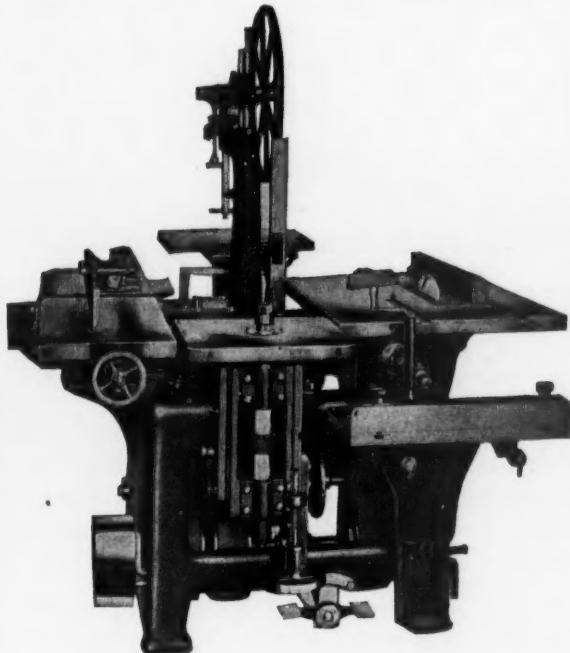
## START THE NEW WAY TODAY

YOU will attain the maximum profits on concrete jobs because of the speed and thoroughness with which the New Way handles concrete. The quick charging and side discharge are time saving factors of New Way construction. We have much more to tell you about this dependable machine.

*Write for catalogue and prices.*

**NEW WAY MFG. CO.**  
Eau Claire, Wis.  
Box 311

# Too Many Hand Saws



MANY contractors are not getting ahead now-a-days simply because they are trying to do everything by hand.

Now in your case, just figure out how much you could save each day if **one** man could do as much as **four**.

The Famous Universal Woodworker No. 31, shown here, will do more straight sawing than four hand-saws, and on top of this will do dozens of other operations out on the job.

The Famous 31 is designed for your particular needs, both as regards price and performance.

*Write for Catalog of Woodworking Machinery*

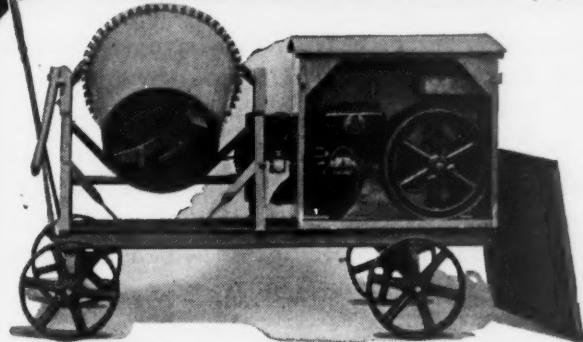
**Chicago Machinery Exchange**

INCORPORATED  
Woodworking Machinery

1223 Washington Blvd.

Chicago, Ill.

# GET YOUR SHARE of this Year's Big Building Jobs



**\$20** Puts This Mixer to Work Coining Big Profits for You

You can pay the balance in eleven small monthly payments under our "Buy with the Rent" Easy Purchase Offer. And every month your earnings from the Kwik-Mix will far exceed what you pay us. You will find the Kwik-Mix not only pays for itself the first year but also pays you a profit, probably larger than you have made with hand labor. Can you imagine a fairer proposition than this?

**10 DAYS' FREE TRIAL**

You run absolutely no risk when you buy a Kwik-Mix. We are so sure it will prove to be just the mixer you've always wanted that we demand you for 10 Days' Free Trial on the payment of only \$20. Give it the hardest, meanest jobs you have. Then if for any reason whatsoever you are willing to return it, ship it back at our expense and we will refund your money promptly.

**Don't Delay--Act Now!** This is your opportunity. Don't let others do all the big things and reap all the big rewards. Simply fill out the coupon and mail it to us today. Now is your chance. Be sure to make the most of it. ACT!

## Make Real Money

Why putter around all your life with a shovel gang, making little better than day wages? Step into the class of the contractors who make real profits on their jobs! Instead of sticking to old fashioned, slow, hand labor with its small returns, mix concrete the modern way, like the big fellows do, with a Kwik-Mix Concrete Mixer.

**KWIK-MIX**  
CONCRETE MIXER  
Built entirely of iron and steel, this remarkable machine withstands the hardest usage year after year. Mixes better concrete faster and with less work than can possibly be done by hand or with inferior equipment. Has capacity of  $3\frac{1}{2}$  to  $4\frac{1}{2}$  cubic feet of materials.

**A Batch a Minute** of thoroughly mixed concrete is easy for the Kwik-Mix. Quick Acting Reverse, an exclusive feature of the drum action, completely cleans out the drum with every throw of discharge lever.  $1\frac{1}{2}$  H. P. Hercules engine operates on less than 2 gallons of gasoline a day. With a Kwik-Mix and a couple of helpers you can do the work of five or six men.

**Badger Wire & Iron Company**  
1005 Cleveland Avenue  
Milwaukee, Wisconsin

**MAIL COUPON TODAY**

**Badger Wire & Iron Company**

1005 Cleveland Ave., Milwaukee, Wis.

Send me your FREE booklet "Building Dollars Out of Concrete" with detailed descriptions of the Kwik-Mix Concrete Mixer and full particulars of your "Buy with the Rent" Purchase Offer

Name.....

Address.....



They provide an outlet for changes of plan in building or plumbing work



## Ankyra Ankor Bolts

READ one of many interesting letters from users of ANKYRAS.

"During various stages of its construction we made a number of changes from the original plan of the house, as nearly everybody does.

"As the walls are metal lath and plaster, it would have been impossible to relocate some of the fixtures in places where no nailing blocks had been provided, if we had not used those remarkable little ANKYRAS.

"Our plumber was particularly impressed with the ease with which the curtain rod for the shower and the various bathroom and kitchen accessories were fastened where he had thought it impossible to make them secure.

"We figure that on the 'time and material' items, ANKYRAS saved us not far from \$100 in labor alone. Not a bad saving for a seven room house."

ANKYRA Ankor Bolts hold in any wall, hollow or solid, metal, stone, brick, lath-and-plaster or compo board. They make a quick, permanent, economical way of fastening fixtures, grounds or trim.

The ANKYRA Circular explains fully. Where shall we send your copy?

## Ankyra Manufacturing Company

155 Berkley St.  
Wayne Junction  
Philadelphia



## The Highest Stamp of Approval

Hundreds of architects specify Bay State Brick and Cement Coating. There is no finer recommendation for this product. And really, the new home or building of stucco or cement is not complete until Bay State is applied.

For Bay State turns the original dull gray color to a pure, rich white or one of many beautiful tints. Because it dries flat, it does not destroy the distinctiveness of the cement or stucco, but adds to it.

Bay State Coating protects. It sinks into the surface and literally becomes a part of the wall it covers. It waterproofs all buildings of brick, cement or stucco.

Broiling sun or heavy snows have no effect on Bay State whatsoever. Dampness will not seep in. Driving rains cannot beat through it.

We should like to send you samples of Bay State Brick and Cement Coating in white and a large range of colors. Booklet No. 20 shows many homes and buildings on which Bay State has been used. Your request on a postal will bring you both. Write today.

**WADSWORTH, HOWLAND & CO., Inc.**  
*Paint and Varnish Makers*

Boston, Massachusetts

New York Office  
Architects Bldg.

Philadelphia Office  
1524 Chestnut St.



# BAY STATE

Brick and Cement Coating

## Special Announcement to All Users of Ideal Equipment

We now have ready for the Market our recently perfected device—

### The New Automatic Attachment

for

### Ideal Concrete Block Machines

Convert all of your old block machines into completely automatic equipment. Produce true, high quality blocks in less time, with fewer motions. Use your present units; and increase your Ideal equipment as your business grows. **No existing Ideal equipment need be sacrificed.**

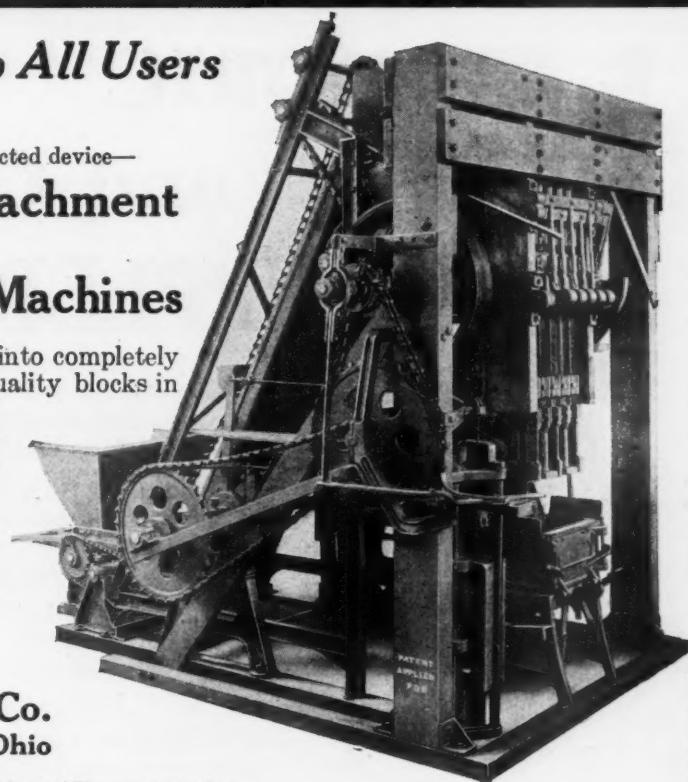
The New Automatic Machine reduces 23 motions to one single motion and a square, true block is made in twelve seconds. As the block is removed, another pallet is placed in the machine; the lever is again pulled—producing another block in the same brief time. You can thus increase your output at least 50 per cent. *Send for Catalog 35*

**READY FOR DELIVERY NOW**

**The Ideal Concrete Machinery Co.**

1308 Monmouth St.

Cincinnati, Ohio



#### Block Machinery Representatives

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Lee T. Ward Co., 617 Filbert St., Philadelphia, Pa.  
Frank Whippner, 3045 Fowler Ave., Omaha, Neb.

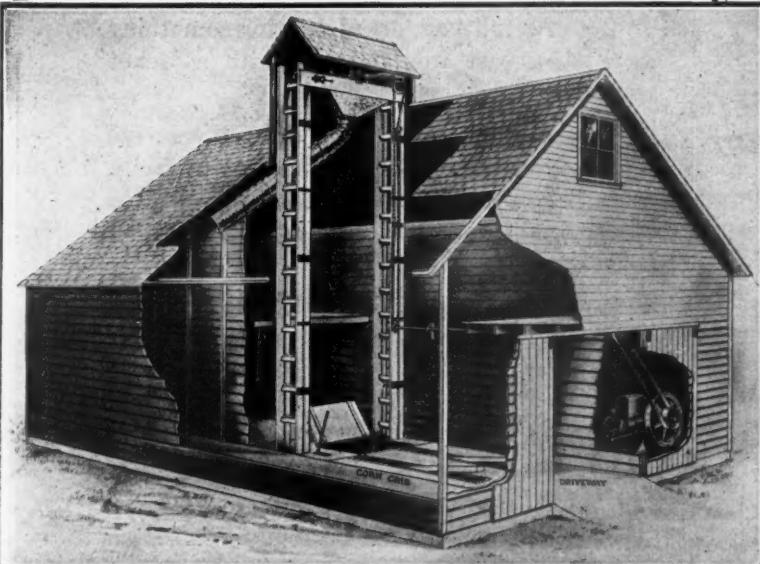
## You'll Profit By Being A MEYER MAN

There are dozens of farmers right in your neighborhood who are still wasting time and labor by scooping their grain by hand.

Many of them would now be using Meyer Elevators if our proposition had been put up to them; they are the best building prospects in the building field today.

We want a reliable, aggressive representative in your community to push the Meyer Elevator. For such a man big profits are assured.

Write us today for free catalog and crib blue prints with our attractive 1921 proposition.



**THE MEYER MFG. CO.**  
302 WALNUT STREET  
MORTON ILLINOIS



# DORIC and GOTHIC STIPPLED BRICK

**W**HEN the ancients finely chiseled the walls of their temples, they were guided by true artistic principles. They avoided smooth, glaring surfaces and produced a stippled texture that was soft and restful because it gently diffused light.

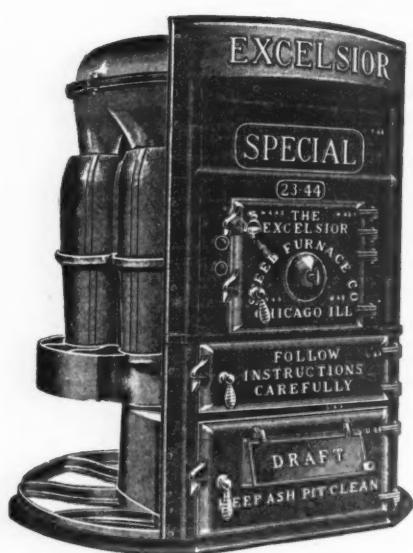
The same artistry is used in making Stippled Brick. The fine incisions with which these brick are marked give moderately roughened faces with a soft texture not so broken up as to direct attention to the roughness, but sufficiently modeled to kill glare and secure an even distribution of light which brings out the brick colors to their best advantage.

And such colors! Coveted shades of buff and tans ranging from delicate hues to deep brown and purplish tones in the Doric Stippled Brick; and rich, glowing, yet subdued reds and browns, from old rose shades to very dark blackish browns in the Gothic Stippled Brick.

***"Doric and Gothic Brick", an artistic booklet devoted to  
Stippled Brick and its possibilities will be sent on request.***

# WESTERN BRICK COMPANY

# More Heat for Less Money



# EXCELSIOR SPECIAL

## *A Powerful Furnace =*

To get the full comfort of heating something more than cast iron or steel with a jacket around it is necessary.

A furnace so powerful as to meet the severe winter blasts and storms and so perfectly controllable as to operate economically in milder winter weather, economically with all fuels.

Such results are obtainable with the SPECIAL. Send for catalog showing this powerful heater in detail.

# THE EXCELSIOR STEEL FURNACE CO.

# PIPELESS **HERO** FURNACES

## MONEY MAKERS for CONTRACTORS

You contractors are the logical men to handle this special offer for you know buildings and can make the installations easily. This new business is the selling of Hero Pipeless Furnaces—a most efficient heating outfit for small homes. You are acknowledged authorities in all home building subjects so you must select only the best. And the Hero has several exclusive features that make it the leader. Ask us what they are.

### Real Selling Cooperation

Perhaps you feel that you are not enough of a salesman—that is where our **real selling cooperation** comes in. We give you sales arguments—facts—and full instructions how to meet every point—and supply you with wonderfully effective advertising to help develop new trade. With our help many contractors are making as high as \$5000.00 a year on Hero Furnaces.



*Write today for terms for exclusive territory.*

**HERO FURNACE CO**  
57 W. Lake St. Chicago, Ill.

# PIPELESS **HERO** FURNACES



### Wausau “Ruff-Stuff” Sandpaper Is GOOD Stuff

It's surfaced with diamond-hard, sharp FLINT QUARTZ from the wonderful Rib Mountain Quarries, near Wausau, Wisconsin.

A special tough, flexible, long-fiber PAPER made for us by great paper mills at Wausau forms the backing; and the GLUE we use is the finest quality of hide glue that the markets afford.

#### SAMPLES FREE

Contractors, Builders, Carpenters and Painters are invited to send for a free book of samples, and to put the “Ruff-Stuff” to every known test for cutting power and durability.

Use the coupon.

**Wausau Abrasives Co.**  
122 So. Clinton St. Chicago

WAUSAU ABRASIVES CO.,  
122 So. Clinton Street, Chicago.

Please send me, *free*, a book of samples of Wausau Flint Sandpaper.

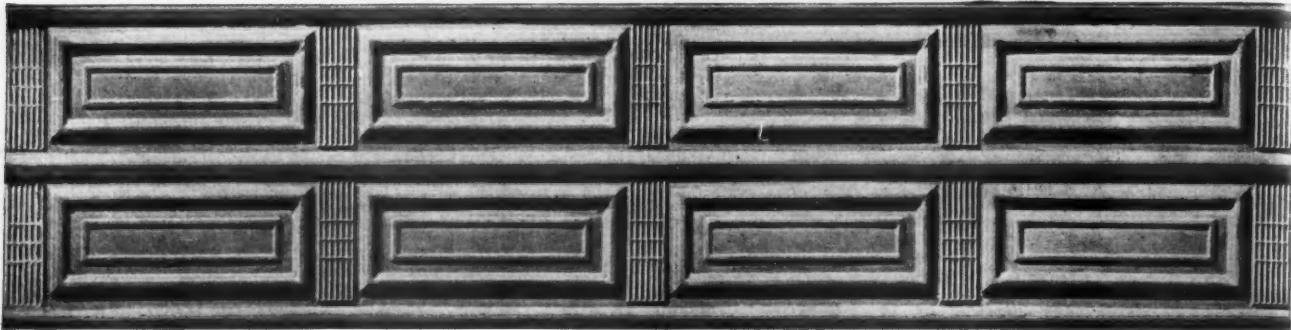
I usually buy my sandpaper from

(Dealer's Name).....

(Dealer's Address).....

Signed.....

Address.....



No  
Furring  
Strips  
Needed

WRITE FOR CIRCULARS SHOWING

# "Invisible Joint"

TRADE MARK

METAL CEILING PLATE No. 1200

Adjustable  
to Space  
Between  
Joists

THE pattern of the individual plate is so designed as to admit of the adjustment of the plates, one inch lengthwise, longer or shorter, in erecting, to conform to the variation in space between the joists. This can be done without noticeable difference in space between panels.

THE large beads running full length of the plate between each row of panels give it rigidity and strength, and obviate the necessity of furring strips. The plates are nailed along each side, and the ease and simplicity of erection will be quickly appreciated. A wide variety of other patterns,

"Metmesh" Metal Lath  
"Expansion" Corner Beds  
"Expansion" Door Casings  
"Milcor" Base Screeds  
"Milcor" Picture Moulds

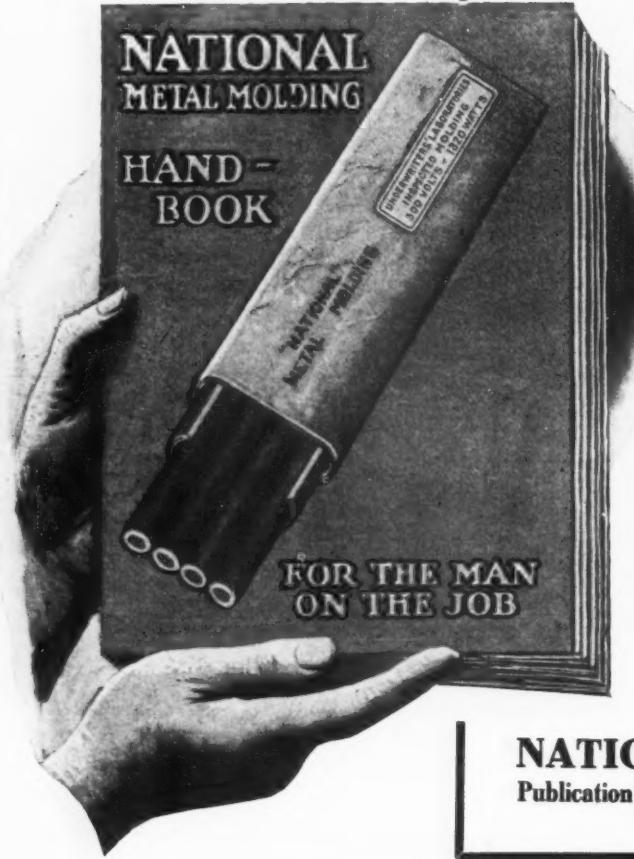


Milwaukee Corrugating Co.

MILWAUKEE, WIS.

Branch Office and Factory, Kansas City, Mo. Minneapolis Sales Office, Lumber Exchange

Flat and Corrugated  
Roofing  
"Titelock" Metal  
Shingles and Tile  
"Milcor" Building  
Corners and Wall Ties



## THIS BOOK IS FOR YOU

We have prepared this book for the solution of all surface wiring problems—both for remodeling work and in certain kinds of new work where electric wires are run on walls, ceilings or other surfaces.

National Metal Molding is known as "The Standard for Surface Wiring." It can be used for every kind of surface wiring installation. It does away with unsightly surface wires, providing instead, a neat, inconspicuous and absolutely safe installation.

### Approved by Underwriters

National Metal Molding is listed by the Underwriters' Laboratories as an approved raceway for surface wiring.

Be sure and write for your copy of this convenient, handy and helpful book.

**NATIONAL METAL MOLDING CO.**  
Publication Dept. Fulton Bldg., Pittsburg, Penna.

# Let the barns you build advertise you

EVERY barn you put up should advertise you as a good barn builder. Whether it is good or poor advertising depends upon how well the owner is satisfied. Installing a King System will keep his stock healthier and preserve the building and contents by carrying off excessive moisture. Your client will profit, you will profit through his good will, and the condition of the building will advertise you favorably.

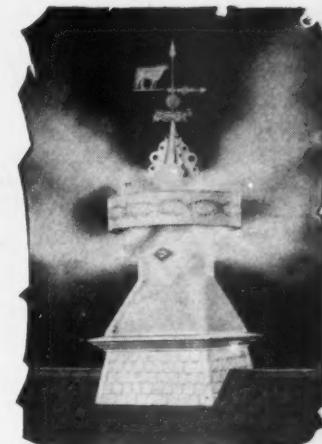
Let us make estimates on King Systems for the barns you are now planning. Send for our Book on Barn Ventilation. It is filled with photographs of many styles of barns with X-Ray views of King Systems installed.

**KING VENTILATING COMPANY, 1202 Cedar Street, Owatonna, Minnesota**  
Ventilating Engineers for Creameries and All Farm Buildings

# KING

## SYSTEM OF VENTILATION

*"Makes Good Barns Better"*



The King Aerator drawing moisture out of a barn. The steam can easily be seen in cold weather.



This diamond King trade-mark on a ventilating system is a guarantee that the building will be properly ventilated.

## WILLIS SKYLIGHTS

### SKYLIGHTS

### GIVE PERFECT LIGHT AND VENTILATION

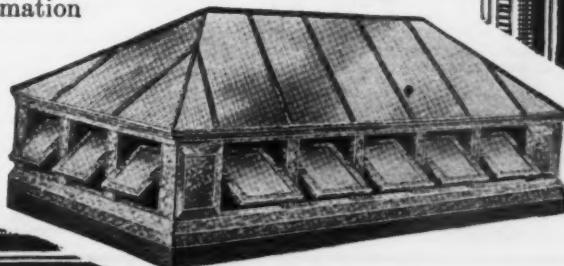
and are so constructed that the largest possible glass area is obtained. Made of the best materials, by careful and experienced workmen. Strong and durable. Guaranteed not to sag or leak.

Can be erected by a man of ordinary ability with a hammer and screwdriver.

We make skylights in all styles and sizes and furnish full sized details for carpenter work.

Write for our catalog giving complete information on Willis sheet metal products.

**Willis Manufacturing  
Company**  
Galesburg, Ill.



## Electric Rotary Machine



## Increase Your Floor Surfacing Profits

by using the ELECTRIC ROTARY MACHINE for

SURFACING and POLISHING Marble, Mosaic, Terrazzo, Cement, etc.  
SANDPAPERING and REFINISHING Wood Floors, New or Old

OUR SPECIAL FLEXIBLE SHAFT, easily attached to the machine, has proven to be by far the best device on the market for covebase, wainscoting stairs, side wall, fixtures, etc. Hundreds of contractors throughout the country are enthusiastic boosters of the Electric Rotary Machine because it will do different kinds of work requiring several machines of other makes. Is admirably adapted for use in small quarters as well as economical and efficient on large areas. Simple to operate, easily moved about, durable and practically fool-proof. Will do the work of ten men and produce a finish superior to any other machine. Write for information and we will show you.

ELECTRIC ROTARY MACHINE COMPANY

(Established 1904)

40 S. Clinton Street

CHICAGO

Dept. J-C.

## Real Protection

REAL protection from lightning is easy to sell.

Every electrical storm creates a fresh demand. Every new building is a prospect. All agricultural schools and farm papers advocate the use of correct lightning rods.

### Sell (BURKETT RODS) THE "BURKETT SYSTEM"

And you have a real lightning protection, approved by the National Board of Fire Underwriters and endorsed by the largest Fire Insurance Companies in the United States.

To insure protection, experts say lightning conductors must either be tape, tube or cable.

Burkett Rods have all three. A spiral copper tape that carries moisture into the ground.

Around this is a tube of woven cable of pure soft copper. THREE-FOLD PROTECTION.

WRITE TODAY FOR OUR AGENCY OFFER  
AND GET STARTED IN PAYING BUSINESS

The Burkett Lightning Rod Co.  
Main Office and Factory  
Fremont Ohio



This well-known registered Trade Mar. is the sign of the best guaranteed protection to life and property against lightning. It identifies the only and original "Barnett System." It protects you and your customers against substitute.



Made of endless pure copper cable. No joints to come apart. Will not rust. Easily put on buildings.

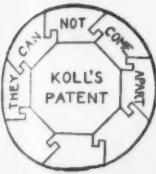
## Carpenter and Builder Agents Wanted

We now have new territories open where we want one reliable Carpenter and Builder to sell our Lightning Rods. Put Barnett Rods on every building you erect as well as on other buildings not yet protected. Make \$75.00 or more extra profits weekly. Thousands of carpenters and builders make this big money handling the Barnett System. Why don't you? We furnish liberal selling co-operation.

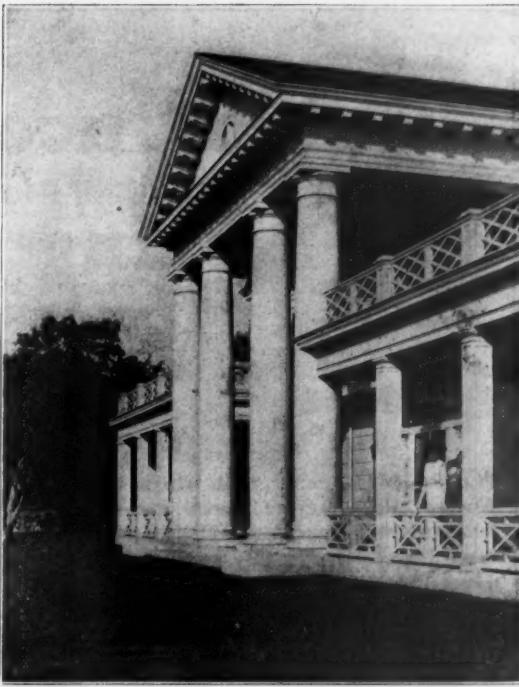
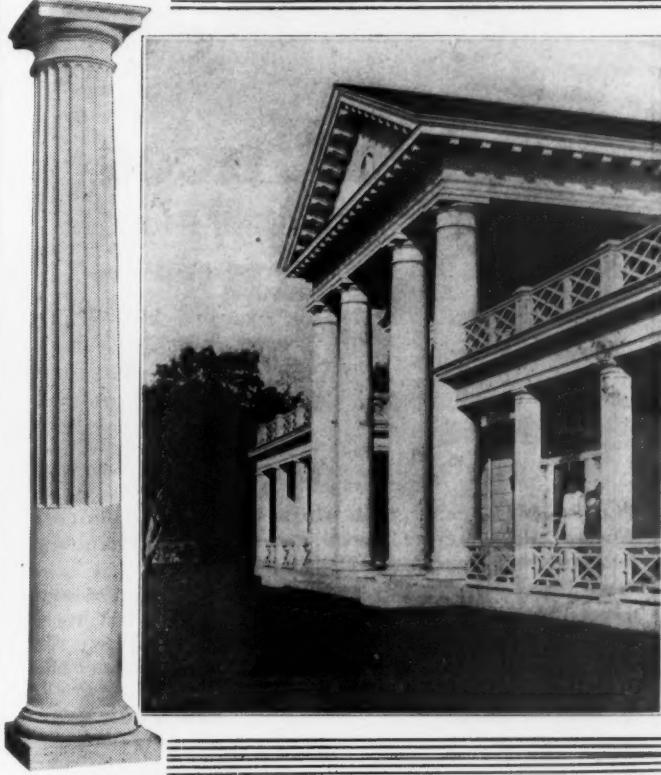
Barnett Rods are in big demand. Statistics show an annual lightning loss of \$10,000,000 in the United States alone. 75% of all losses to farm and suburban property is due to lightning. Barnett pure copper cable rods will eliminate 75% of risk. Every farmer and property owner needs Barnett Protection, because one stroke of lightning may leave his building in ashes. The cost is Cents compared with the Dollars saved. Your territory is a valuable opportunity for you. Get our Agency now for this season before the territory is taken. Write today for free Cable samples, wholesale prices and complete information about the Barnett System.

JOS. L. A. BARNETT & CO., Cedar Rapids, Iowa

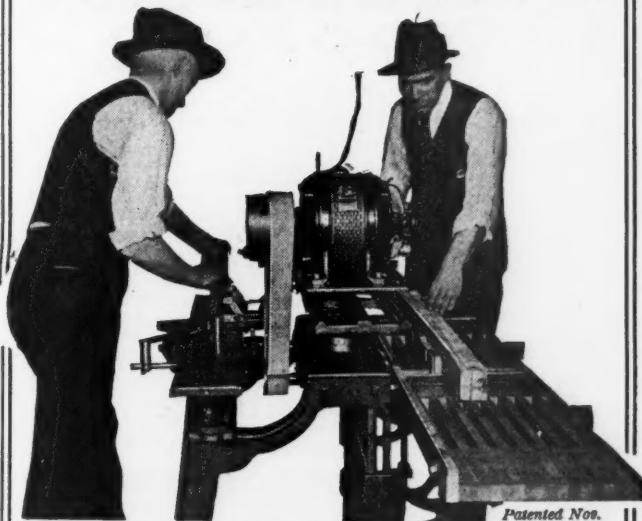




Homes Provided with Columns of Quality  
which are  
Architecturally Correct and Mechanically Perfect.  
When writing enclose 15c and ask for Catalogue "U-47"  
**HARTMANN-SANDERS CO.**  
Main Office and Factory  
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## The Master Wood Worker



Patented Nov.  
1914-1920

A guaranteed saving of \$400.00 per month on labor costs.  
**UNDERSLUNG RIP SAW. 6'6" BELT MEANS POWER.**  
Overhead cross cut saw that works like a swing saw. Dadoes, joints, planes, rabbets, bores, mitres, cuts mouldings of any shape, rips and joints on the bevel, cuts jack-rafters in one cut, houses stair strings, in fact makes all cuts necessary in building construction better and faster than any other machine.

**DRIVEN BY SPECIAL POWERFUL MOTORS.**

Will rip 4-inch thick without over load. Work in sight at all times. No power wasted in countershaft. Built to last a lifetime. Two men can carry it. Goes through a 2'6" door. Wonderfully accurate. Pays for itself as you are paying for it.

*Catalogue on request*

**The Woodworker Manufacturing Co.**  
Brush and Congress Streets, Detroit, Mich.

## Are you ready?

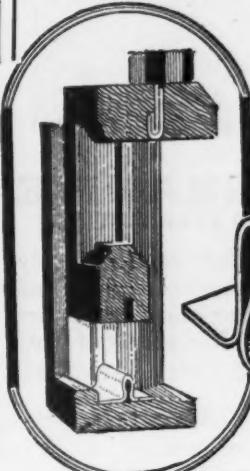
Another building and remodeling season is almost here. Right in your town there are dozens of buildings that should be equipped with Allmetal Weatherstrip.

Are you acquainted with our double-paying proposition? When you install Allmetal Strips you make two profits—one on the strip, the other on the installation. Allmetal Weatherstrip is easily installed and our sales plan gets the business for you.

Write for our proposition.

**Allmetal Weatherstrip Co.**

124 W. Kinzie Street  
Chicago Illinois



*Allmetal*

# 100,000 Contractors SHORT

100,000 Trained  
Men: Estimators,

Superintendents of Construction and Contractors Needed. Be one of the men who will fill these places. But you need training to do it. Be able to estimate every cost on a bungalow or sky-scraper, and read plans accurately by studying at home. Graduates stepping into big jobs. Money back if not satisfied.

**Don't Envy the Boss—BE ONE.**

Our Book "Estimating the **FREE**  
Costs of a 6-room Bungalow" Send name today for this valuable information. Every cost of labor and material figured and way to get them shown.

The Western School of Estimating & Plan Reading  
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Denver, Colorado

Without obligation please send me your book on Estimating

Name \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

# CONCRETE

BLOCKS, BRICKS, BUILDING TRIM,  
POSTS, ORNAMENTAL WORK, ETC.

WHEN FACED WITH

## MICASPAR CRYSTALS



IS CHANGED INTO

## SPARKLING GRANITE

BEAUTIFUL, ARTISTIC and EVERLASTING

Made in six scientifically milled sizes, extremely hard, sharp and free from dust. Insures strength and beauty. Every dollar expended on Mica Spars brings five times its value. Booklet, "Micaspar and How to Use It," with free samples, mailed on request.

Crown Point Spar Company, Inc.  
663 Broadway, New York

**Vit-Flux**  
Hardens  
Concrete  
and Reduces  
Freezing  
Hazard

The freezing of concrete in winter work is a real danger. Winter laid concrete floors are slow in developing strength and wearing qualities.

**Vit-Flux** develops strength, toughness and wearing qualities, not only much more rapidly, but to a greater degree; and at the same time **Vit-Flux** reduces the freezing hazard. Correspondence solicited.

GRANITEX COMPANY, Inc.  
171 Madison Avenue  
NEW YORK CITY

**TWO PERFECT  
DRAWING PENS**  
No. 751 Post Paid \$2.00  
No. 750 Post Paid \$1.00

No. 751

No. 750

### Send for Yours Today

Extra good pens that help good craftsmen produce extra good work

#### SATISFACTION GUARANTEED

No. 751 — Photograph of actual pen shown. Dotted line shows pen open for cleaning and unique construction. Strongly made with powerful spring. 5 $\frac{1}{2}$  inches long. Postpaid..... \$2.00

No. 750 — Excellent value. One of the best pens made. 5 $\frac{1}{2}$  inches long. Postpaid..... \$1.00

### THE PEERLESS BLUE PRINT CO.

3413-47 Fifth Avenue  
New York

# Everlasbestos Flooring

#### *The Composition of Highest Quality*

This seamless one-piece floor meets the demand for a floor that is easily cleaned, comfortable under foot, attractive in appearance and economical. It is the logical floor for apartment houses, offices, stores, factory lunch rooms and wash rooms.

It is particularly adaptable to alteration jobs as it is light in weight and quickly installed directly over the present floor. Easily laid by any mason or plasterer. Manual of Instructions free with order.

Ask for sample and descriptive catalog. Please state the nature of the work you have in mind.

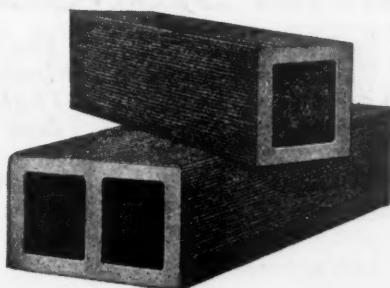
### Everlasbestos Flooring Company

North and Amity Streets Rochester, New York



*An Everlasbestos Washroom*

Economy for the Builder—Profit for the Dealer



## Alliance Multi-Color Facing Tile

Here's something you want, Mr. Contractor—a new rough texture hollow tile for facing purposes. It's as beautiful in its color tones and texture as the finest face-brick and just as permanent. Time, fire, frost and damp proof—a perfect insulation against heat and cold.

Every builder and contractor should know of this most economical material. Reduces building costs by saving freight, material, time, labor.

We also manufacture Alliance Multi-Color Ruff-Face Brick—so widely known for their splendid texture and beautiful color tones.

*Our literature, samples, prices and the money to be made by handling our products will interest you. Write us today for samples and details.*

**THE ALLIANCE BRICK CO.**  
15 Review Bldg. Alliance, Ohio

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HERE IS YOUR OPPORTUNITY TO EXPAND AND MAKE A GREATER PROFIT IN YOUR BUSINESS

# MAGNESTONE

COMPOSITION FLOORING

## OF HIGHEST QUALITY AND MERIT

Sanitary, attractive, durable, noiseless, warm and light, in weight. **MAGNESTONE** composition floors are easy to clean and to maintain. They are ideal for use in schools, residences, hospitals, banks, hotels, stores, etc.

Laid like cement in any color or combination of colors. MAY BE PUT DOWN OVER NEW OR OLD WOOD OR CEMENT FLOORS.

*Write for our Magnestone Flooring Proposition today and ask your dealer.*

## American Magnestone Corporation

SPRINGFIELD ILLINOIS

*Manufacturers of ARTISTIC STUCCOS AND FLOORING*  
Factories: Springfield, Ill. Kansas City, Mo. Ottawa, Ill.

## Use Better Furnaces!

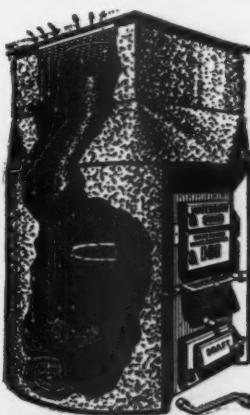
You will sell more houses at a better profit if you equip them with pipeless furnaces which are absolutely gas-tight and dust-tight.

Everyone who has ever contended with coal-gas, smoke and dust from the furnace wants his home equipped with the kind that is guaranteed to eliminate these nuisances.

### THE WATERBURY Seamless Pipeless FURNACE

is built with a one-piece welded steel body. No seams. No joints. No leaks. No cement. The house you build will bring you better profit and will sell more easily if equipped with the Waterbury.

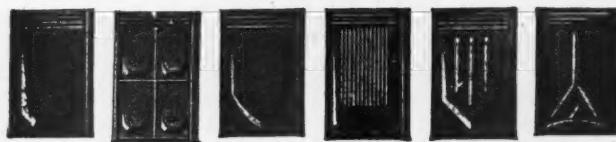
*Write for our business-getting, money-making proposition to contractors.*



**The Waterman-Waterbury Co.**  
1121-57 Northeast Jackson St., Minneapolis, Minn.

## WALTER'S & COOPER'S METAL SHINGLES

*The  
Shingles  
That  
Last*



*The  
Shingles  
That  
Last*

The Most Complete Line of Designs

Made in Painted Tin or Genuine Re-dipped Galvanized Tin

**SOLD AT THE RIGHT PRICE**

May we send you full-size samples and prices?

**NATIONAL SHEET METAL ROOFING CO.**

339-345 GRAND STREET  
JERSEY CITY, N. J.



### The Crescent Universal Wood Worker

Meets practically every demand of the average wood working shop. It will help you cut down your labor costs, increase your output and add to your profits.

Ask for catalog giving complete description and telling about our complete line of wood working machinery. Your copy is ready now.

**THE CRESCENT MACHINE COMPANY**  
224 MAIN STREET  
LEETONIA, OHIO

### Have You Watched a Blystone in Operation?

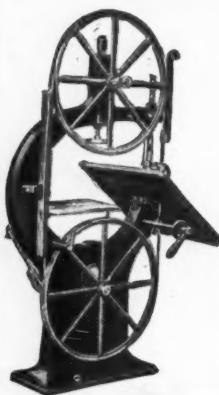
They are unlike any other made. The Patent Reverse Spiral Arrangement of the mixing blades is found only on the Blystone.

With this arrangement the batch is carried from one end of the drum to the other twice with every revolution of the shaft and shoveled over forty-four times each minute. The Blystone mixes successfully concrete, mortar, hardwall or the old-fashioned hair plaster.

**WRITE FOR OUR CATALOG**

**BLYSTONE MANUFACTURING CO.**  
920 Carpenter St. Cambridge Springs, Pa.

**L. & P. MANUFACTURING COMPANY**  
Niagara Falls, Ontario  
Manufacturers and Distributors  
for Canada



### PROFITABLE SAWS

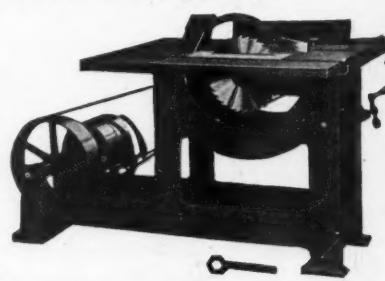
SILVER SAWS embody such principles and improvements as make it possible for them to produce! They have proven their superiority by a most remarkable record of satisfying service.

Their praises rise from the lips of half a million enthusiastic contractors all over the United States.

**A TIP!** Don't let your competitor take the lead. Equip your shop with Modern Silver machinery and be assured of the utmost wood working machinery efficiency.

Write today for our illustrated catalog covering a complete line of Band Saws, Swing Saws, Saw Tables and Jointers in various sizes and styles.

**The Silver Mfg. Co.**  
Box 345  
SALEM, OHIO



**GOOD FOR A LIFETIME**

of dependable, satisfactory service. Always accurate, precise, convenient. By all odds the "one best buy" in Transits and Levels,—the BECKMANN gives you the utmost value for money invested in it.

*Ask for new catalogue, just issued*

**THE L. BECKMANN COMPANY**  
500 ADAMS STREET TOLEDO, OHIO

**IMMEDIATE DELIVERY ON DRAFTING SUPPLIES**

We manufacture a full line of high grade supplies made under our own supervision and always found right.

Also steel tapes, scales, engineering instruments, tracing cloth and paper, drafting room accessories, etc.

Ask for samples of our blue print paper, also superior tracing cloth. Let us quote on your needs. Ask for catalogue AB. Circular AC describing and illustrating our new "Precise" Parallel Ruling Attachment.

**New York Blue Print Paper Co.**

Sensitized Papers  
Drawing Material  
Drafting Furniture  
102 Reade St.  
New York City

**Your Work and Our Instruments**

There is no economy in poor work, is there? Hence, no economy in mediocre instruments. Spaulding-Moss drawing instruments and drafting materials have a nation-wide reputation for quality. They are chosen by high quality men. You ought to use them.

Prices—extremely reasonable. Catalog at your request—mail or phone.

*"Ask Headquarters"*

**SPAULDING-MOSS COMPANY**  
42 Franklin Street  
BOSTON

**PAYS FOR ITSELF IN ONE DAY**

Makes a perfect mortise with straight back and side. One man will cut 120 door lock mortises in 8 hours. Turn the handle, the machine does the rest.

**CHAMPION MORTISER**

Adjustable from round hole to 6 $\frac{1}{4}$ " slot. Will mortise hard, soft, or knotty wood, crossed, grained, or end wood through dowel pins or panel ends without the use of brace, bit or any other tool. Automatic and ball bearing. Used for door mortises, closets, cabinet doors, screen frames, sash mortises, folding doors, etc.

*Sent on ten days' trial.*

**Colgan Machinery & Supply Co.**  
901 New Hayden Building COLUMBUS, OHIO

## THE IMPROVED SCHLUETER

Rapid—Automatic—Ball  
Bearing—Electric

### Floor Surfacing Machines



### Attention!

Get in LINE with all the Regular Contractors, Carpenters and Builders. What you need is an Improved SCHLUETER Floor Surfacer to scrape all your old and new Floors.

Why surface by hand and suffer—Loss of Time—Money, and also Contracts on account of unsatisfactory work, when you can purchase an IMPROVED SCHLUETER SURFACER—the machine with all troubles left out.

"The SCHLUETER Surfacers are worth their weight in GOLD" as one of our Customers express them, and he is right.

A few Jobs and the machine has paid for itself. In a short time the people will know who and what you are: you get the work because you have the TOOL. You advance to a higher grade and are a man of high class work, for that is just what the people of today want.

We want to send you a SCHLUETER on Trial and let you see for yourself the quantity and quality of work it accomplishes.

#### The Improved SCHLUETER Floor Surfacer

will surface right up to the wall or baseboard without the use of Side Roller. Just the Machine you would want for surfacing all floors, whether old or new. Perfect results guaranteed. More than 20,000 of our Machines now in use. Guaranteed against defect in material and workmanship for five years.

#### Manufactured by M. L. SCHLUETER

222 West Illinois St., Chicago, Ill.

SEND FOR OUR PRICES, ALSO TRIAL PROPOSITION



Why Hire  
Six Men  
When  
One Can  
Do It!



### GET GREATER PRODUCTION FROM SMALLER PAY ROLL

Lumber and building material prices are down; you know that an era of renewed building activity is bound to come—in fact, is almost upon us. The builder who gets the greatest production from the smallest pay roll is the fellow who makes the most money.

#### The American "Universal" Floor Surfacing Machine

and one man can surface more floors in a day and do it better than six men can possibly do by hand. This means that your floor surfacing work can be done at approximately one-sixth the cost of hand work. The other five-sixths of your present pay roll can be expended on other work. This actually means greater production from the same or a smaller pay roll; it means bigger profits for you.

Floor surfacing with the American "Universal" provides a year 'round field for the demand for better floors is resulting in the refinishing of old floors on every hand; every man building offers a profitable contact to the man who can do the best work at the lowest cost.

The American "Universal" is electrically driven, leaves no woven or chatter marks, finishes floors to walls, deposits dust and dirt in dust bag, operates economically and without tiring effort on the part of the operator.

Get ready for the building boom in your locality; write today for complete information about the American "Universal" and what contractors say about it.

#### The American FLOOR SURFACING Machine Co.

Originators of  
Floor Surfacing  
Machinery

515

Sa. St. Clark  
Street

Toledo,  
Ohio

Thousands of Con-  
tractors are using  
"Universals"

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

THE Waywell Chappell Automatic Ball Bearing Electric Floor Surfacing Machine is what you need to finish your new or old wood floors quickly and just the way you want them.

The machine is simple, easily handled, made correctly, built to last—the result of years of experience in building this specialty.

As QUALITY of work is the first essential in finishing floors, particularly new work in residences, flats, apartments, etc., all roller vibration must be done away with. It is remarkable how smoothly and steadily this ball bearing machine operates.

Only surfacing machine having roller sanding even with baseboard from either side of machine, doing away with uneven work of edge roller attachment. Removes old varnish, paint, oil-soak, black, etc., rapidly, or cuts down warped edges quickly. Four sizes—for the largest areas or the smallest rooms.

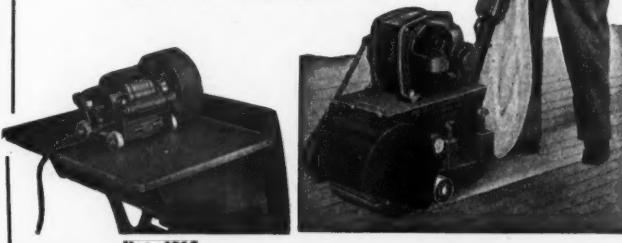
The Little Automatic Electric Surfacing Machine (on desk) is a wonder for removing varnish from desk tops, counters, etc., or for new work, show windows, sills, doors, in corners, closets, or other confined spaces.

Write for folders. Accept our free trial offer.

Manufactured by

### Waywell Chappell & Co.

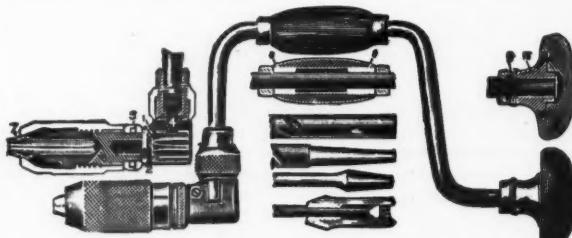
137-139 North Jackson St.,  
Dept. M, Waukegan, Ill.



Pat. 1916

### Vaughan's Vanadium Supersteel Braces

LIKE all Vaughan & Bushnell products, these braces had to be better than ordinary braces before they could carry the Vaughan Vanadium Supersteel brand. Their development remedies the imperfections in or objections to the ordinary brace.



Vaughan's Vanadium Supersteel Brace No. 222  
Four Numbers, 8 to 14-inch Sweeps

Many dealers are undoubtedly carrying more brands of tools than they would ordinarily. Readjustment dictates cutting down these lines. They will wisely concentrate on quality tools.

Vaughan's Vanadium Supersteel Tools have a strong quality appeal. The patented key socket attachment of this brace obviates troubles inseparable from end screw construction.

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2114-2138 Carroll Avenue

Chicago, Illinois

"It Pays to Buy Good Tools"

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Yes, on the farms as well as in the city, there's an increasing demand for pure, fresh running water.

We offer you the Swanstrom Fresh Water System that you may supply the demand at a big profit to yourself.

The Swanstrom System requires no dangerous and bothersome storage tank. By means of compressed air the water is pumped direct from the well to a faucet where it is to be used.

It's a simple matter to install the Swanstrom System and it will satisfy the customer for years to come.

*Write us for complete information*

## Swanstrom Water System Co.

C. MOOR, President

WEST HAMMOND, ILLINOIS

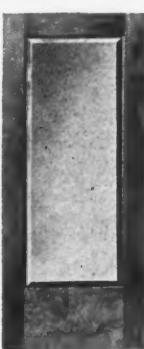
Post Office: Hammond, Indiana

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As manufacturers of standardized woodwork on a large scale we offer

### Gould Quality WOODWORK

at a price which will be profitable to **You**.



1921 Catalog—Write for your copy

We will be glad to send you a sample of the Puttyless Window upon request.

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Established 1867

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## Better Shingles... Better Stains

With prices greatly reduced, with quality of raw materials greatly improved, "CREO-DIPT" Stained Shingles now offer the best values at the price for side walls and roofs.

This example of "CREO-DIPT" Dixie White 24-inch Shingles for the side walls assures unusual Colonial White. "CREO-DIPT" Moss Green 16-inch Shingles for the roof have enhanced the beauty. Such quality in both shingles and stain is not found in the open market.

Send today for Portfolio of Fifty Homes by Prominent Architects, as well as color samples. Ask about "CREO-DIPT" Thatched Roofs and 24-inch Dixie White Side Walls for the true Colonial White effect.

### CREO-DIPT COMPANY, Inc.

1028 Oliver St.

No. Tonawanda, N. Y.

"CREO-DIPT" Stained Shingles used on side walls and roof. Home of E. C. Smith, N. Tonawanda, N. Y. Arch., Louis Eggert, North Tonawanda, N. Y.



Portfolio  
of Homes

## "CREO-DIPT" Stained Shingles



## Woodworkers and Machinists

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## RAYLS TOOL STORE

CATALOGUE  
No. 27B

T. B. RAYL COMPANY  
GRAND RIVER at WOODWARD  
Detroit Michigan

**T. B. Rayl Company**  
Grand River at Woodward, Detroit, Mich.



**For Strength**

WALLS are subject to all kinds of strains, shocks and abuse. To insure a wall lining that withstands the hardest kind of service—to turn out a job that will last—use Compo-Board, the only wall board with the wood core. Years of hard use has proved its great strength and durability.

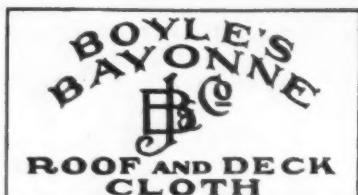
Compo-Board is as warm as a plaster wall a foot thick, is impervious to moisture, deadens sound, and cannot warp or buckle. It is as easy to saw and nail as lumber. The best wall board for your trade is the best wall board for you.

Be sure to look for the wood core. Write for sample and interesting booklet.

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5777 Lyndale Avenue North (at 44th)  
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Reg. U. S. Pat. Off.

Will insure the roofs of your piazzas, sleeping porches, sun parlors etc., against leakage.

Makes a fine looking and serviceable job, withstands winter's snow and ice and summer's hot sunshine.

All other canvas roofings are laid in wet paint.

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Requires no white lead bedding, consequently is easy to lay.

Porch floors covered with Bayonne are noiseless to the tread of feet or the patter of rain.

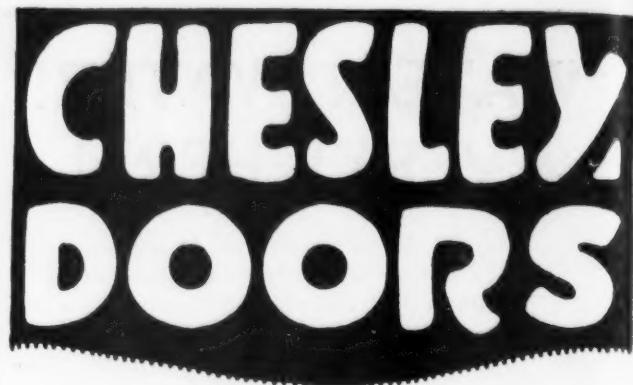
It is guaranteed waterproof and will not crack or buckle or peel.

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ESTABLISHED 1860

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## STANDARDIZED-FIREPROOF SHIPPED FROM STOCK

No rivets, bolts, open joints or separate mouldings. May be finished off to conform to interior requirements. Hardware easily fitted. Extremely light in weight but ABSOLUTELY FIRE PROOF. Full underwriter's approval. Chesley Doors are a patented product, standardized for immediate shipment from STOCK. COST ONLY SLIGHTLY MORE THAN WOOD. FAR LESS THAN HOLLOW METAL.

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—and you can't afford to be without an

## "IRELAND"

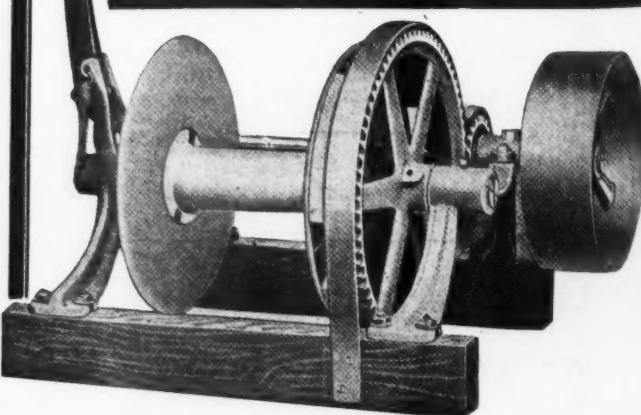
There isn't a contract, large or small, where an IRELAND hoist won't save you money and trouble in back filling, hoisting, etc.

It is a low cost hoist with lots of power.

It can be equipped with two large drums, each with a capacity of 1,000 lbs. on a single line.

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Silos and Storage Bins

## The Construction That Means Money to You

Preston-Lansing Vitrified Tile not only builds fine, lasting structures, its great satisfaction builds lasting business for you.

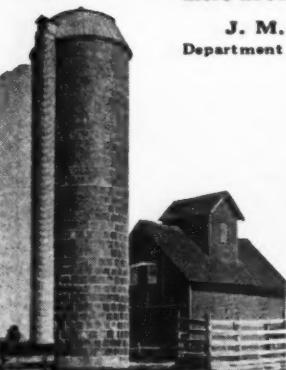
Every job, whether it be a silo, grain bin or storage bin, is a beautiful, everlasting monument to your workmanship and judgment.

Proof against fire, rust, rot, vermin, weather and repair. Necessitates no forms. Less contractor's equipment. Learn more about it. Write

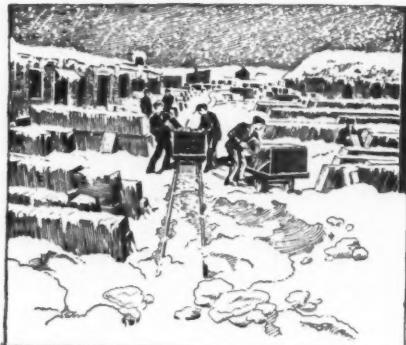
**J. M. PRESTON COMPANY**  
Department 428



Lansing Tile Bins, owned by Chilhowee Milling Co. Chilhowee, Va.



Lansing Silo, on farm of Patwood, Ottawa Ill.



## Shipping Sheldon's Slates from the Quarry in Mid-winter

The fact that

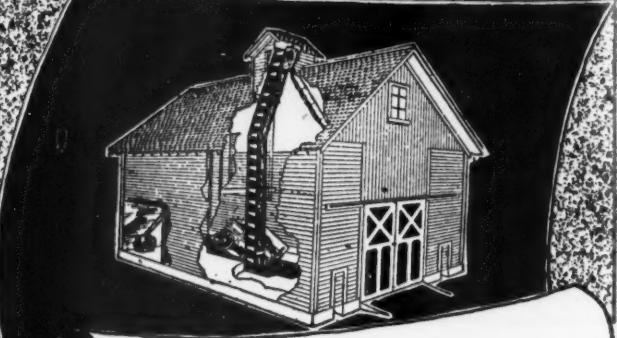
**SHELDON'S**  
RED, GREEN, PURPLE, BLACK  
**SLATES**

are piled up outdoors, without any protection from the elements, is one of the strongest possible evidences of their durability for roofing purposes.

*Contractors, Roofers, Property Owners: Let us show you why Sheldon's Slates make the most economical as well as the longest lived roof.*

**F. C. SHELDON SLATE CO.**  
[GRANVILLE, N. Y.]

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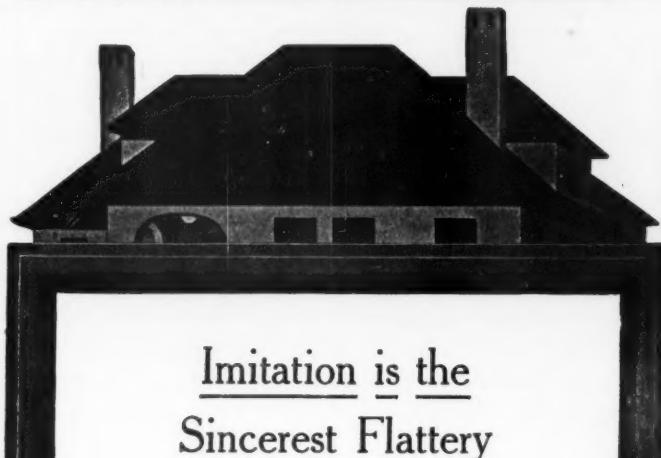
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You builders who plan farm buildings should send at once for our free crib plans and blue prints; there's going to be a big demand for new cribs next fall.

The Morton Roller Chain Cup Elevator is the strongest, lightest running, simplest in construction and easiest to erect; cannot overload—no clogging—no shelling of corn.

*Write us today*

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is well expressed when applied to roofing.

SLATE is the original roof material—used centuries ago, and the fact that we now find so many imitations is the best evidence of its reputation.





### For Facing or Stucco Work

Makes a permanent dazzling white when used with white cement.

Looks like the best grade of Blue Bedford Stone, when used with gray cement.

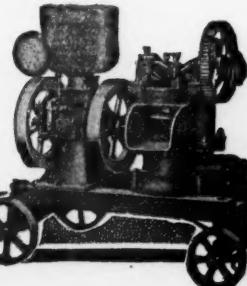
Crystal Silica is a **manufactured** product, produced by disintegrating St. Peter's Rock and washing, rinsing and drying; followed by intensive screening to ideal size.

*"Crystal Silica is White Sand,  
But White Sand is not Crystal Silica."*

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Dealers are  
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are unequaled. Round — White Polished — Gold Stamped. The *extra fine quality* insures a point of "working value."

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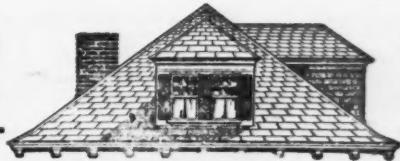
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Asphalt  
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## REX ROOFING PRODUCTS

Manufactured to fill every need of a roof covering in any climate and by a manufacturing concern whose policies are shaped to be "right" from every point of view.



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TRADE MARK

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EVERLASTIC STUCCO can be applied on wood, cement, brick, stone, etc., is non-absorbing, waterproof, fireproof, and will last a lifetime.

EVERLASTIC STUCCO is superior to cement stuccos, in that it does not crack or chip.

EVERLASTIC STUCCO is the ideal material for old or new buildings, Enduring, Indestructible and artistic.

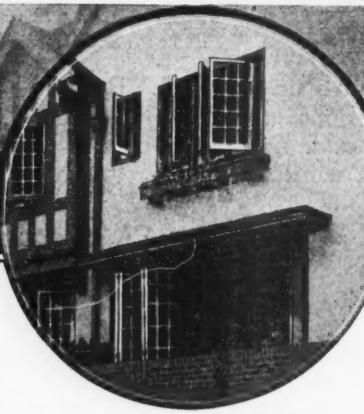
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**Franklyn R. Muller & Co.**

Composition Floors and  
Stucco Manufacturers

**Asbestone**

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WAUKEGAN, ILLINOIS



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WHITNEY Windows are furnished in complete Ready-Fitted Sash Units, ready to set into the openings. They make pleased customers, more and better business and bigger profits.

### Whitney Windows

have none of the faults of ordinary windows. They open outward out of the way—slide easily to any point in the opening, permitting wide unobstructed view. Don't interfere with screens. Can't stick, rattle or slam. Storm-proof when closed.

Our large stock of materials insures prompt delivery. Write on your letterhead for our proposition to contractors and booklet "Progress in Windows."

**Whitney Window Corporation**  
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Minneapolis, Minn.

## CALCIMINES AND WATER PAINTS

These materials are so much cheaper than wall paper and oil paints, and are so much better than lime wash that every wide-awake builder and owner should investigate them fully, learn which are the most practical, and find out how much they will help to reduce costs.

Calcimines are glutinous compositions intended for decorating ceilings and walls of residences, offices, schools, churches, theatres. The best are called MURALITE and CALCITINE.

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The best is called PERMANITE.

Our products are more practical than any similar ones on the market, and are sure to please you.

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*Manufacturers*

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SPEED - ECONOMY - STRENGTH

Capacity—2000 pounds. Body—8 feet long, 46 inches wide, 12 inches high. Body and under frame built of open hearth steel. Axles—1½ inch square bed, special high carbon steel. Springs—Semi-elliptic, oil tempered and double heat treated. Bearings—Bower roller. Wheels—1½ inch spoke, artillery type, second growth hickory. Tires—32x2, solid rubber. Weight—534 lbs.

Other models with gates at front; also extension tongue which permits carrying lumber, poles, ladders, etc. 30 feet long.

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Let us quote on your next year's requirements.

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**CONVECTOR**  
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Artistic and Ornamental in appearance and is positively guaranteed to be Fire, Lightning, Rain, Storm and Wind-proof.

Its extreme lightness (about one-eighth that of slate) durability and moderate cost commend it to those wishing something out of the ordinary, manufactured from best quality Worcester Grade Terne Plate, furnished painted of Tightcote Galvanized, size 10 x 14 inches.

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QUICK ACTING *The Taylor* SELF LOCKING

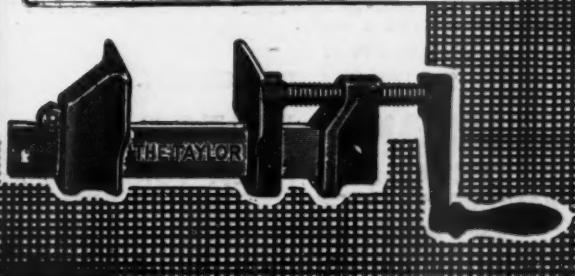
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**AND IT'S MORE ECONOMICAL, TOO**

Tile floors and walls for baths, halls and porches, add a touch of distinction to the home. They have a substantial, solid "look." And as for beauty, nothing can compare with them.

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World's Largest Mantel House

# FIBERCOTE MAGNESITE STUCCO

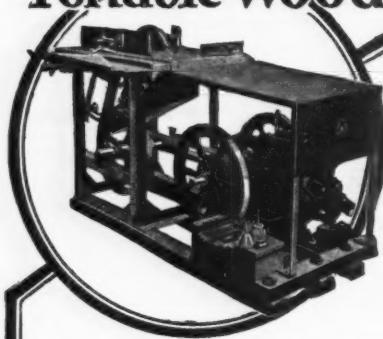
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**FIREPROOF—DAMPROOF—WEATHERPROOF—NON-CRACKING.** LOW COST APPLICATION at any season of the year and in any climate, by any competent plasterer. Material is all one standard quality throughout—no inferior scratch coat is used. FIBERCOTE Stucco offers a variety of rarely beautiful finishes and is superior, in economy and durability, to any stucco on the market.

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Samples and price list upon request.

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With attachments for molding, mortising, rabbeting, jointing, matching, boring, sand papering, tool grinding, sawing irregular shapes and tongue and groove work.

### Finish the Job Quick

THE big profits go to the contractor and builder who does the job quick. Every day saved cuts down your costs, without lowering the prices you can get.

Put the Fairbanks-Morse Wood Worker with "Z" engine (Bosch Magneto equipped) on the job. It will do the work of many men at less cost. And the carpenter's apprentice can run it easily.

Write for Bulletin E-7059.

CONTRACTORS' EQUIPMENT DEPT.

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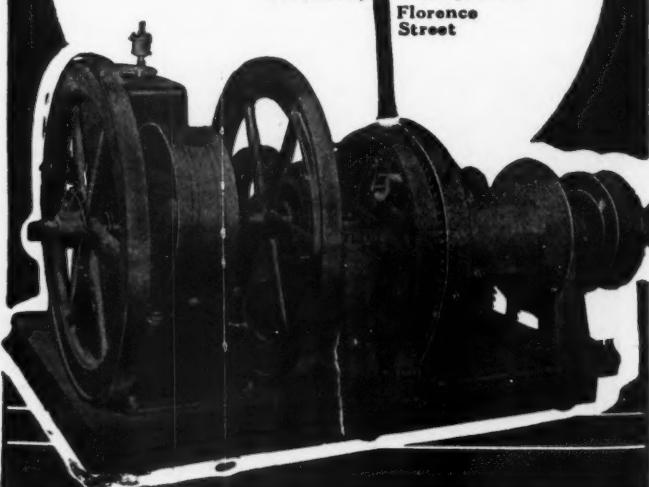
**"OK" IS OK**  
IN EVERY WAY

### OK Power Hoists

Fill every building need. They may be had in single, double or reversible types. Simplicity, strength and efficiency make OK the most serviceable and satisfactory hoists for your jobs.

Write today for catalog showing complete line

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#### A Small Mixer That Dumps Both Ways

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STANDARD INDIVIDUAL SHINGLES  
4 IN ONE SHINGLES  
SLATE SURFACED ROLL ROOFINGS  
DECORATIVE ROOFINGS  
PLAIN COMPOSITION ROOFINGS

bear this label

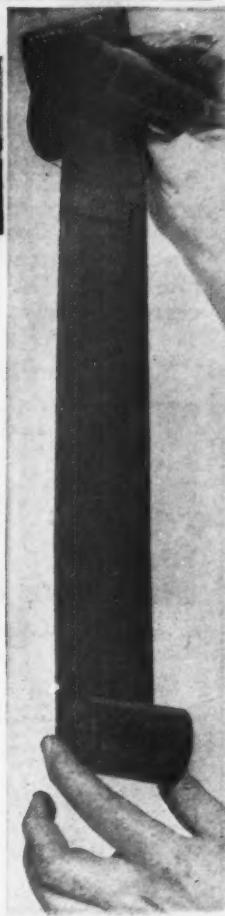


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Make it a pleasure to lay roofing—  
save 25 to 30 minutes per square in laying.  
Make a better joint—no Lap Cement  
to brush down a 45-ft. edge—no smoky  
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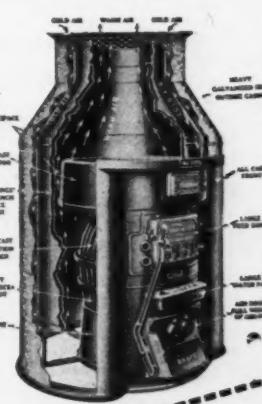
By making out a list of the home owners in your neighborhood who do not have furnace heat, you will find that there are dozens of good live prospects for the THERMO PIPELESS FURNACE.

One installation in a neighborhood will sell many others. We help you sell the Thermo by advertising direct to your prospects.

The Thermo Pipeless Furnace is reasonable in price and our proposition allows you a very liberal commission.

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RYBOLT HEATER  
CO.  
Ashland, Ohio

MAIL  
THIS



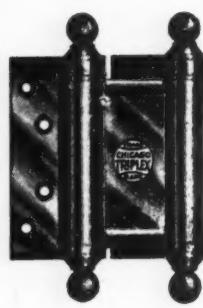
Gentlemen:—  
I am interested in your Pipeless Furnace Proposition

Name .....  
Street .....  
Town .....  
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## SPRING HINGES A SUGGESTION

Do you specify a spring hinge with distinctive features which will appeal to your client and assure satisfaction to all concerned?



### Chicago "Triplex" Spring Butts

offer this advantage to you. The appearance, durability and finish of this article are unsurpassed, and in consideration of prices that are conservative in respect to value, the up-to-date builder cannot afford to risk his reputation for goods that are unsatisfactory.

Send for Catalogue C 32. It illustrates and describes the most complete line of Spring Hinges manufactured.

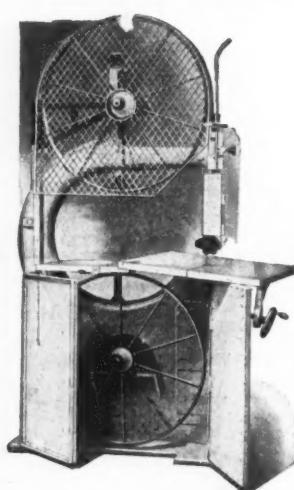
**Chicago Spring Butt Company**

CHICAGO



NEW YORK

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—  
Motor to Wheel by Belt

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Motor to Wheel by Silent Chain Gear and Pinion

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Steel Wheels

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—  
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## The Modern Home Convenience needed in farm and suburban homes

Modern homes require running water, under pressure. Each set of plans prepared by you for farm or suburban homes should call for a water supply system. Let us send you a copy of our water supply bulletin, that you may become acquainted with the merits of Hoosier Water Service.

*If interested, write for Bulletin.*

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are unquestionably the most efficient, time and labor-saving scaffolds on the market today.

No bolts, screws or nails. They hook to the studding and your scaffold is up in much less time than it takes to tell you about them.

If you have been wasting many hours on each job building your own scaffolds, try "Trouble Savers" on your next job.

Use them for 30 days and if you are not extremely well pleased, we will refund your money.

*Write today for our proposition.*

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Scaffolding  
Company**

Evansville,  
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REMARKABLE opportunity for one high grade field man in each territory—pleasant, permanent, profitable work, with opportunity for advancement—all or part time.

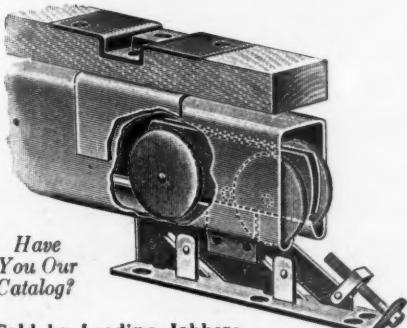
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Sold by Leading Jobbers

With bicycle quality ball-bearings and patented side adjustment of track (readily accessible after it is hung) makes it impossible for door to scrape or bind.

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CARROLL STREET  
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## Garage Sliding Doors

*Run Smoother  
Last Longer*

FOR garage door construction there is a specially built A-P hanger with malleable iron truck frame, roller bearing wheels, ball bearing swivel and anti-friction guide rollers.

The guide rollers turn as they come into contact with the side of the track, preventing friction and insuring ease of operation. This feature is protected by A-P patents. No other hangers have it.

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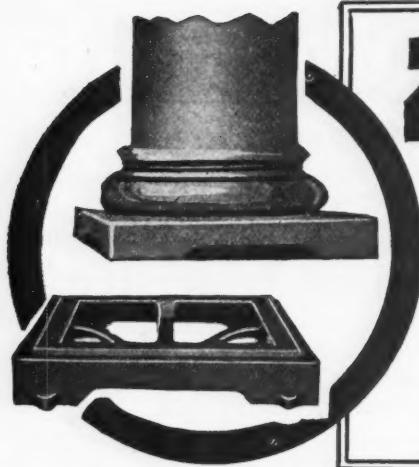
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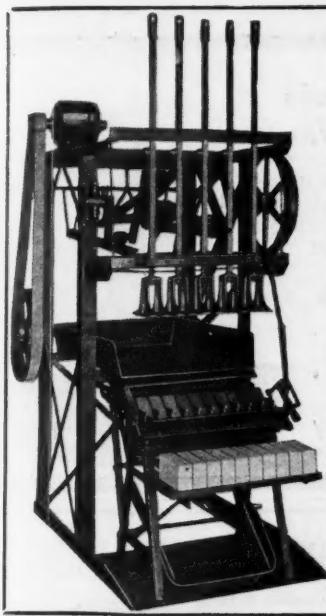
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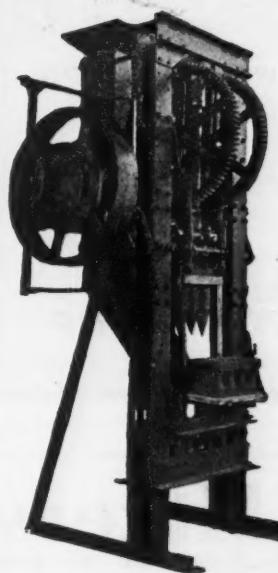
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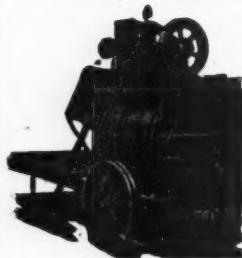
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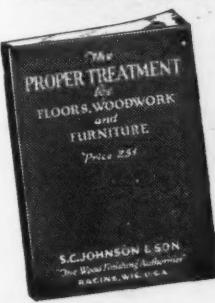
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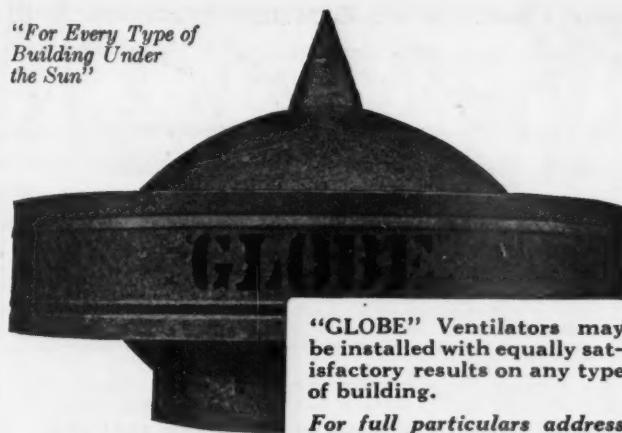
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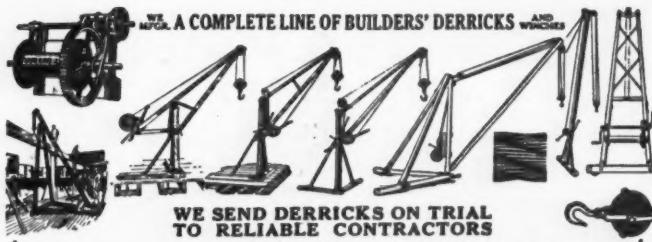


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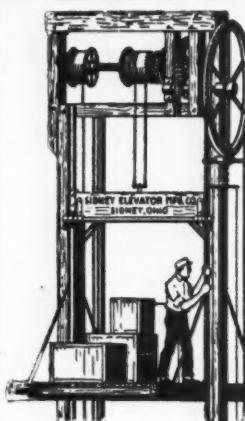
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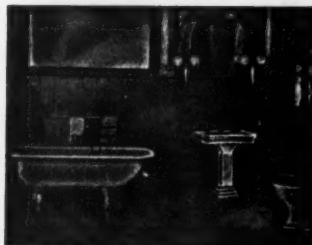
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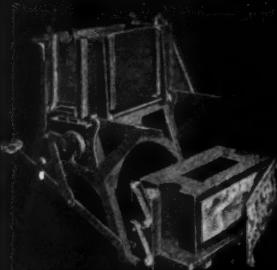
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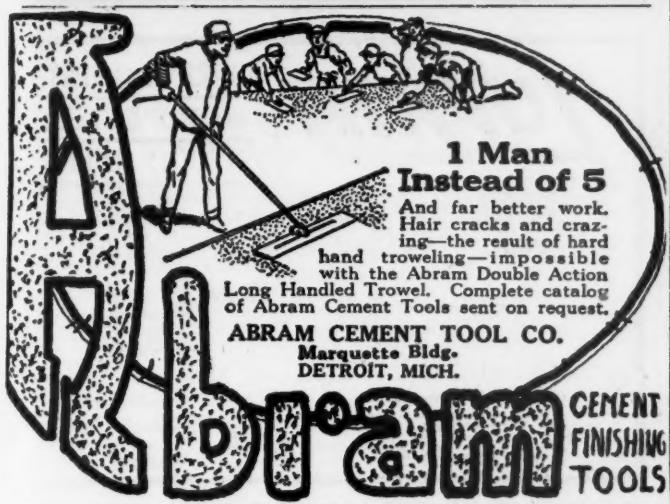


## MAKE BLOCK THIS WINTER

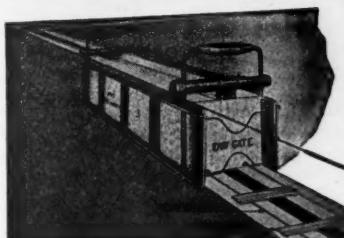
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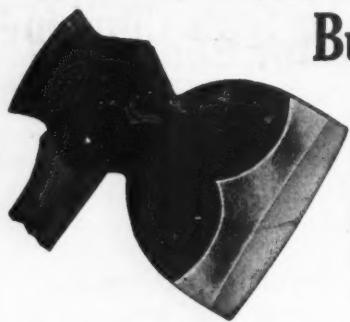
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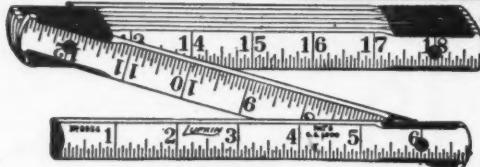
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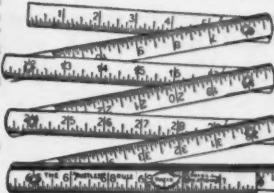
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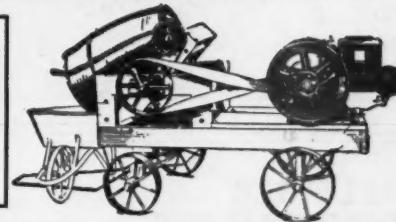
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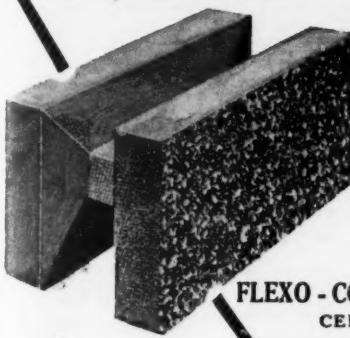
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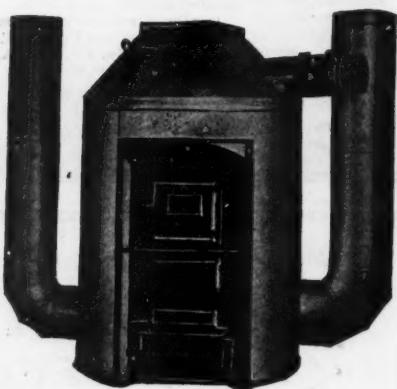
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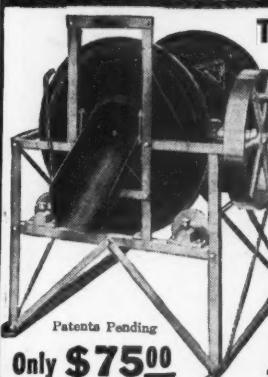
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THE MASTER MIXER

From Factory to You—Save 40%

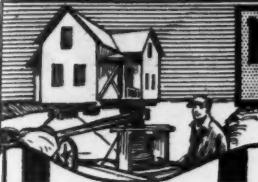
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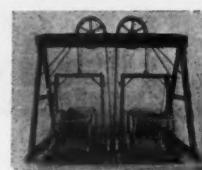


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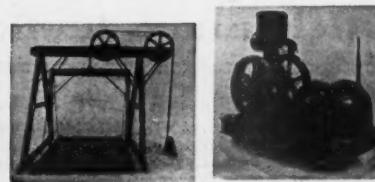
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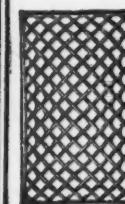


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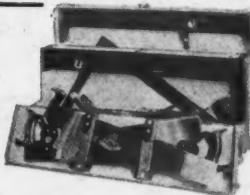
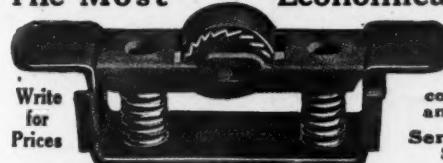
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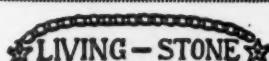
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